The Builder

A JOURNAL FOR THE

Architect, Engineer, Operative & Artist.

C. D. LAING Sc.

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BUILDERS' BENEVOLENT INSTITUTION.—THURSDAY NEXT—An ELECTION of THREE PENSIONERS (two males and one female) will take place on THURSDAY, 28th inst. at the London Tavern, GEORGE PLUCKNETT, Esq. in the chair. Polling commences at TWELVE, and closes at THREE o'clock precisely. A. G. HARRIS, Secretary.

N.B. The Offices of the Institution are Removed from No. 19 to No. 23, Southampton-street, Bloomsbury.

November 22nd, 1861.

NEW ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

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Gentlemen wishing to become members, or to act as local honorary secretaries, are invited to apply at once to the hon. secretary. The object of the Association is to procure photographs of architectural works not otherwise obtainable.

Annual subscription, One Guinea.

THE ARCHITECTURAL EXHIBITION, 1862.

The Committee beg to announce that the EXHIBITION will OPEN as usual NEXT YEAR. All works to be sent to 9, Conduit-street, on the FIRST MONDAY in MARCH. Carriage from and to the country will be paid.

The Committee beg to remind Architects that this Exhibition will certainly be seen by visitors of all nations, and they trust that the Collection of Designs and Models will worthily represent the position of the art in Great Britain.

The Collection of Building Materials and Patents will also be comprised as usual in the Exhibition.

JAS. FERGUSSON, F.R.A.S. } Hon. Secs.
JAS. EDMESTON, F.R.I.B.A. }

ASSOCIATION of BRITISH INVENTORS.—The determined hostility evinced in certain influential quarters towards Patent Property, and the strenuous efforts which will, probably, be made during the next session of Parliament to alter the Laws relating to Patents, have rendered it desirable that an ASSOCIATION of INVENTORS, and of those interested in the working of Patents, should immediately be organised. Gentlemen willing to assist in forming the Association, are requested to communicate at once with R. MARSDEN LATHAM, Hon. Sec.

71, Fleet-street, London, E.C.

INSTITUTION of ENGINEERS of SCOTLAND.—The Council of this Institution have permitted the SALE of their PAPERS to the Public, to the extent of fifty copies only, entitled "Transactions of the Institution of Engineers in Scotland." 4 vols. 8vo. with engravings in each volume, price 1l. 16s. 6d.

JOHN WEALE, 59, High Holborn, W.C.

ARCHITECTURAL UNION COMPANY (Limited), 9, Conduit-street, Regent-street.

NOTICE is hereby given, that the FOURTH ANNUAL ORDINARY GENERAL MEETING of the ARCHITECTURAL UNION COMPANY (Limited) will be held on WEDNESDAY, the 4th of DECEMBER next, at THREE o'clock, p.m. at the PREMISES of the Company, No. 9, CONDUIT STREET, REGENT STREET, W. to receive the Directors' Report and the Audited Balance Sheets, to declare a Dividend, and to transact the business required to be transacted at the Ordinary General Meetings of this Company.

EXHIBITION of WATER-COLOUR DRAWINGS.—ROYAL MANCHESTER INSTITUTION.—In order to afford a more especial recognition of the claims of Water-colour Art than is possible at the General Annual Exhibition in the autumn, the Council have again determined to OPEN an EXHIBITION of WATER-COLOUR DRAWINGS in APRIL next, and the opportunity of exhibiting will not be confined to artists and private individuals, but will be extended to the trade generally. The Exhibition will continue open until the and of June, and drawings will be received under regulations stated in the usual printed circular. Works should be forwarded so as to arrive not later than April 10. Mr. JOSEPH GREEN, of 14, Charles-street, Middlesex Hospital, will take charge of any works sent to him to forward. Parties willing to contribute, are requested to communicate particulars to the Honorary Secretary as early as possible, as it is desirable to ascertain the extent of the proposed Exhibition, and what space will be required.

HENRY COOK, Honorary Secretary.

NEW WESTMINSTER BRIDGE.

In consequence of the approaching completion and opening of this beautiful structure,

JOHN ARCHBUTT

feels compelled to make some extensive alterations in his premises, and being desirous of clearing off some of his present large stock, offers to professional gentlemen and the public at large a DISCOUNT of TEN PER CENT. on all orders with which he may be favoured BEFORE CHRISTMAS. Levels, Theodolites, Box Sextants, Telescopes, Field Glasses, Mathematical Drawing Instruments, by Troughton & Simms, Elliott, Cary, Dixey, and other esteemed makers. Microscopes, Air-pumps, and a great variety of other instruments, too numerous to quote.

20, Bridge-road, Lambeth, November 1st, 1861.

COMPETITIONS.

NEW BURIAL GROUND at WHITBY.

To ARCHITECTS, &c.—The Burial Board for the Townships of Whitby and Ruswarp, in the county of York, is ready to receive PLANS, SKETCHES, and DESIGNS for the BUILDING of CHAPELS, LODGE for Gatekeeper, and LAYING OUT the NEW BURIAL GROUND, with all necessary roads, &c. subject to such stipulations and conditions as may be obtained, together with any information, on application to

STEPHENSON & SON, JOHN BUCHANNAN, } Clerks to the said Board.

Whitby, November 20, 1861.

DARTMOUTH DRAINAGE and IMPROVEMENT.—Intending Competitors can be furnished, on moderate terms, with a Copy of the Plan and a complete Set of Levels.—A. Z. I. Office of "The Builder."

CONTRACTS.

RYDE PIER.—To CONTRACTORS and BUILDERS.—The Directors of the Ryde Pier Company are desirous of receiving TENDERS for the ENLARGEMENT and IMPROVEMENT of the RYDE PIER; consisting of a pier and tramway, with a double line of rails, along the east side of and adjoining the present pier from the quay wall, now in course of erection at the inner end of the pier to the south-east face of the pier-head, which is a length of 2,106 lineal feet, or thereabouts; together with a Slipway, Gangway, and Breakwater, near the outer or north end of the said pier and tramway. The pier, slipway, gangway, and breakwater are to be constructed of timber. The drawings, specifications, and conditions, with forms of Tender, may be inspected on and after the 25th instant, at the Offices of Mr. W. E. RATCLIFFE, Solicitor, Ryde, Isle of Wight, where also Tenders may be delivered, marked, "Tender for Tramway, &c." on or before TEN o'clock on SATURDAY, the 21st of DECEMBER next. The Directors do not pledge themselves to accept the lowest or any other Tender. Security will be required for the due performance of the works.

Ryde, Isle of Wight, November 18, 1861.

TO RAILWAY COMPANIES, IRON MANUFACTURERS, and OTHERS.—The Corporation of York are desirous of receiving TENDERS for the DISPOSAL of Four Wrought Iron LATTICE GIRDERS, now lying at Lendal Ferry, viz.: Two Double Lattice Girders, each 183 feet 6 inches long, 15 feet high, top and bottom member 2 feet 6 inches wide; the weight of each girder is about 87 tons. Two Lattice Girders, each 15 feet high, top and bottom members 15 inches wide; the weight of these girders is about 45 tons each. The lattice bars vary from 7 inches by ⅜ inch to 4 inches by ⅜ inch. Together with the cast iron Bed Plates and Brackets, weighing about 11 tons. Also 64 cast steel Rollers, 4 inches diameter, weighing about 3½ tons. The purchaser to be at the entire risk and cost of the removal of the girders. Sealed Tenders, stating a price per ton, to be sent to the City Surveyor's Office, Guildhall, before TWELVE o'clock at Noon on THURSDAY, NOVEMBER 28th, 1861. No pledge is given that the highest or any Tender will be accepted.—To view the Girders, and for further particulars, application to be made to THOS. PICKERSGILL,

City Surveyor, Guildhall York.

CONTRACTS.

WAR DEPARTMENT CONTRACT.—NOTICE to BUILDERS.—TENDERS are required for the CONVERSION of the RIDING-SCHOOL at St. John's-wood Barracks, in the county of Middlesex, into a GYMNASIUM.

Parties desiring to Tender for this work must leave their names at this Office, on or before MONDAY, the 25th day of NOVEMBER, 1861, and pay the sum of 10s. 6d. for the bills of quantities, which will be forwarded to each party as soon as prepared by the Government Surveyor.

The Secretary of State does not bind himself to accept the lowest or any Tender.

Royal Engineer Office, London District, 11, James-street, Buckingham-gate, S.W. 13th November, 1861.

WAR DEPARTMENT CONTRACT.—NOTICE to BUILDERS.—TENDERS are required for the ERECTION of a NEW WING and other ALTERATIONS to the Military Hospital at Canterbury.

Parties desiring to Tender for these works are required to attend at this Office on WEDNESDAY, the 27th day of NOVEMBER, 1861, at TWELVE o'clock, noon, to appoint a surveyor to take out the quantities in conjunction with the Government Surveyor. Each party will be required to pay the sum of one guinea for the quantities. Parties may appoint a surveyor by letter, addressed to the Commanding Royal Engineer, Dover, if inconvenient to attend, and forward, at the same time, the above amount for the quantities.

The Secretary of State does not bind himself to accept the lowest or any Tender.

Royal Engineer Office, Dover, 18th November, 1861.

WAR DEPARTMENT CONTRACT.—NOTICE to BUILDERS.—CAMDEN FORT.—FIRST CONTRACT.—TENDERS are required for WORKS of DEFENCE, including BOMB-PROOF BARRACKS, at Camden Fort, Cork Harbour.

Parties desiring to Tender for these Works are required to attend at this Office on FRIDAY, the 22nd NOVEMBER, 1861, at TWELVE o'clock, noon, to appoint a Surveyor to take out the quantities in conjunction with the Government Surveyor. Each party will be required to pay the sum of Two Guineas and a Half for the quantities.

The Secretary of State does not bind himself to accept the lowest or any Tender.

Latest day for sending in Tenders, 4th JANUARY, 1862.

Office of Commanding Royal Engineer in Ireland, Dublin Castle, 11th November, 1861.

MERSEY DOCK ESTATE.—BIRKENHEAD.—LANDING-STAGE in the LOW-WATER BASIN.—To CONTRACTORS, SHIP-BUILDERS, BOILER MAKERS, &c.—The Mersey Docks and Harbour Board are prepared to receive TENDERS from parties willing to undertake to construct, fix in place, and complete, ready for public use, a new FLOATING LANDING STAGE, for the recess in and alongside the south wall of the new Low-Water Basin. The Contracts will comprise sixty-five Floating Pontoons more or less, of the very best boiler-work, in lengths vary ing from 33 feet 6 inches to 48 feet 6 inches, and weighing, if the number remains unaltered, 600 tons or thereabouts; four main and other Kelsons, or hollow rectangular Beams, the longest 1,038 feet in length, from 3 feet 6 inches to 4 feet 6 inches in depth, and 2 feet in width, the gross weight of which will be 960 tons or thereabouts; four other hollow Beams of wrought iron, forming the girders to two bridges connecting the stage with the quay, and weighing with the rolled joists about 211 tons, sixty-three tons, more or less, of cast iron, and about sixty-two tons of smith's work in saddles, straps, bolts, spikes, chains, &c.; together with about 43,000 cubic feet of timber, in deck-beams, decks, &c. wrought, fixed in place, and painted.

A specification of the works and conditions of contract, with duplicate schedules of quantities for the parties to tender upon, together with an atlas of detailed drawings, will be supplied upon the payment of seven guineas to any party making application for the same at the Office of the Dock Secretary, Revenue-buildings, Liverpool, between the hours of TEN and FOUR, on and after MONDAY, the 4th day of NOVEMBER next, and any further information that may be required can be obtained on application to Mr. JOHN B. HARTLEY, Engineer to the Mersey Dock Board, at his Office, Dockyard, Coburg Dock. Sealed Tenders for the above works, on the duplicate schedule of quantities which accompanies each specification, are to be delivered at the Secretary's Office in sealed covers, addressed to the "Chairman of the Committee of Dock Works," and marked on the outside "Tender for Landing-stage," on or before SATURDAY, the 30th day of NOVEMBER next, at TEN o'clock, a.m. after which hour, on that day, no Tender will be received. Parties, or their agents, to be in attendance on that day, at ELEVEN o'clock. Each Tender must contain a sealed letter, with the names of two responsible parties who are willing to become bound jointly and severally with the parties tendering for the contract, in the sum of 10,000l. for the due performance thereof.—The Board will not be bound to accept the lowest or any of the Tenders.—By order, DANIEL MASON, Secretary.

Dock Office, Liverpool, October 23rd, 1861.

TO STONE MERCHANTS, DRAIN-PIPE MAKERS, and OTHERS.—The Board of Works for the Wandsworth District are desirous of receiving TENDERS for the SUPPLY of BROKEN GUERNSEY GRANITE, and other Stone and Materials. Also for the supply of Drain Pipes; also for the execution of the various Jobbing Works, in repairing and making good to sewers and gullies, and laying drainage pipes; also for the supply of Horses on Hire, and for Barge Work in the several parishes of Battersea, Clapham, Putney, Streatham, Tooting, Graveney, and Wandsworth; and also for Dusting in the parishes of Clapham, Putney, Streatham, Tooting, Graveney, and Wandsworth; and for Scavenging in the parish of Clapham. The contracts are to be for one year from Christmas next, with the exception of that for the supply of drain-pipes, which is to be for one, two, or three years, determinable at the option of the Board. Separate Tenders are to be sent in for each parish. The specification may be seen and forms of Tender obtained at the Offices of the Board, Battersea-rise, between the hours of NINE and FIVE. Tenders are to be sent in under seal to the Board, endorsed, "Tender for ——, parish of ——," on or before TUESDAY, the 3rd day of DECEMBER next. Security will be required for the due performance of the respective contracts. The Board do not pledge themselves to accept any Tender.—By order of the Board of Works for the Wandsworth District,

ARTHUR ALEX. CORSELLIS, Clerk to the Board.

Battersea-rise, November 12th, 1861.

[For remainder of Contracts see next page.

CONTRACTS.

TO QUARRYMEN, STONE MERCHANTS, and OTHERS. — The Dover Local Board invite TENDERS for the supply of

500 Loads of Broken Flints,
500 Tons of Broken Granite,
1,000 Feet Lineal of Kerb, and
1,000 Square Yards of best Yorkshire Paving.

The flints, to be broken to a size to pass through a 2-inch mesh, are to be delivered at the rate of between 30 and 40 loads per week, from the 1st day of DECEMBER next. The granite to be blue Guernsey broken granite, to be broken to the same size. Between 200 and 300 tons to be delivered before the 29th day of FEBRUARY next, and the remainder before the 30th day of MARCH next. The kerb to be Aberdeen or Guernsey granite, or other approved stone, 12 inches on face, by 7 inches deep, dressed die square. The quarry from which the same shall be taken to be specified in the Tenders. The whole to be delivered before the 30th day of MARCH next. The Yorkshire Paving Stone to be of not less than 3½ inches in thickness, to be delivered before the 29th day of FEBRUARY next. The flints are to be delivered by the Contractor at such part or parts of the borough as the Surveyor of the Board may direct; and all the other materials contracted for into carts to be provided by the Local Board, on the quay at Dover; and all the deliveries are to be subject to the approval of the Surveyor, who is to have power to reject any that are not in his judgment in accordance with the terms of the contract. The price to be named is to include freight, labour, and all other charges whatever, except wharfage and local dues at Dover, which will be paid by the Local Board. Payment will be made within two months after the date of the certificate of the Surveyor that any delivery is in accordance with the terms of the contract. Tenders may be made for all or any one or more of the articles above named. Any person whose Tender is accepted, will be required to execute a deed of contract in accordance with the above terms, to be prepared by the Town Clerk at the expense of the Local Board; and further particulars may be obtained by inquiry at the Surveyor's Office. Tenders, in sealed covers, marked "Tender for Flints," or as the case may be, are to be delivered at this Office on or before WEDNESDAY, the 27th day of NOVEMBER instant. The Local Board do not bind themselves to accept the lowest or any Tender.—By order,

EDWARD KNOCKER, Town Clerk.

Local Board Office, Dover, November, 1861.

BIRKENHEAD WATERWORKS. — To CONTRACTORS.—The Birkenhead Improvement Commissioners are prepared to receive TENDERS for the CONSTRUCTION of a PUMP, WELL, ENGINE-HOUSE, and WATER-TOWER; Service Reservoir, Engine-man's House, Labourer's Cottage, and other works on Flaybrick-hill, Birkenhead. Plans, drawings, and specifications will be ready for inspection at the Gas and Water Offices, Hamilton-square, Birkenhead; and at the Office of Mr. BATEMAN, the Engineer, Little George-street, Westminster, on and after MONDAY, the 11th instant. Tenders on the printed forms must be delivered at the Commissioners' Offices in sealed covers, addressed to the Chairman of the Gas and Water Committee, on or before FRIDAY, the 29th instant. The Commissioners will not be bound to accept the lowest or any of the Tenders.—By order,

AMBROSE WALN, Clerk of the Commissioners.

Commissioners' Offices, Hamilton-square, Birkenhead,
November 5th, 1861.

TO BUILDERS. — Persons desirous of TENDERING for the ERECTION of PREMISES for the Tralee Young Men's Christian Association (comprising Public Hall, Library, Reading and Class Rooms, &c.), can obtain copies of specification, drawings, &c. by application to the Hon. Secretary, CAPT. ROWAN, Prince's Quay, Tralee, Ireland. Communication with Tralee by rail; and also by steamers from all the principal ports.

J. F. FULLER, Architect.

BOROUGH of HERTFORD.—To GAS COMPANIES and PROPRIETORS of GAS WORKS.—The Commissioners for Paving and Lighting the Borough of Hertford desire to receive TENDERS for LIGHTING the PUBLIC LAMPS of the town with good COAL GAS of the best quality. There are about 110 Lamps to be lighted every night for 46 weeks in the year, with the exception of a night of full moon and the two preceding nights. The time of lighting and putting out the lamps is defined in a printed season-table. The Contractor will be required to keep all the Lamps in good repair and condition, and to provide for the Lighting and Extinguishing of the same. The present Contract will expire on the 16th day of JULY next. The Tenders may be for one year, or for a term of years. Any information may be obtained by application to Mr. M. S. LONGMORE, Hertford, the Treasurer of the Commissioners, and Tenders are requested to be sent (sealed up), addressed to him, on or before the 1st day of JANUARY, 1862.

ASCOT HOTEL and STABLES. — To CONTRACTORS.—The Directors of the Ascot Hotel and Stables Company are prepared to receive TENDERS for the ERECTION of an HOTEL, with Offices and Stables, for one hundred horses, at Ascot Heath, near Staines.—The plans and specifications of the works may be seen at the Grand Stand, Ascot Heath, and at the Office of the Architect, Mr. J. F. CLARK, Newmarket.—Tenders to be delivered, under seal, on or before TUESDAY, the 10th day of DECEMBER next. The Directors do not pledge themselves to accept the lowest or any Tender. J. F. CLARK, Architect.

November 16, 1861.

GLASS MOSAIC.—G. H. STEVENS begs to call the attention of the Clergy, Architects, &c. to his revival of ECCLESIASTICAL DECORATIONS IN GLASS MOSAIC. The Mosaics are the most legitimate application of colour, where it may be required in the enrichment of Fonts, Pulpits, Reredoses, whether in stone or marble. Specimens and tracings of works executed may be seen.—Estimates and other information at 56, Great Queen-street, Lincoln's Inn, London, W.C.

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MR. T. J. HILL'S PRACTICAL DRAWING ESTABLISHMENT.—Gentlemen attending the Day Classes have the privilege of going over the buildings in progress under Mr. Hill's superintendence, also of taking out quantities from the building as well as from the plans. Fee for the Day Classes, 3l. 3s. per quarter.—Prospectuses at the Offices, 70, Old-street, E.C.

TO ARCHITECTS and SURVEYORS.—ROBERT W. SPRAGUE & CO. tender their thanks to their Friends and the Profession generally for the kind support received by them, which has enabled them to organize, in addition to their previous Establishment, a large and efficient staff, thoroughly conversant with Building terms, thus qualifying them to LITHOGRAPH BILLS of QUANTITIES, SPECIFICATIONS, &c. with the peculiar accuracy and despatch so essential to the profession.

Specimens of Writing and Scale of Charges will be forwarded on application to ROBERT W. SPRAGUE & CO.

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TO INVENTORS.—All intending Patentees should procure the PRINTED INFORMATION regarding Patents—their cost, and the mode of procedure to be adopted—issued gratis by the General Patent Company (limited), 71, Fleet-street, London. ROBERT M. LATHAM, Secretary.

SURVEYING, LEVELLING, and CIVIL ENGINEERING.—PRACTICAL FIELD INSTRUCTION given in Surveying, Levelling, Civil Engineering, &c.

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VOL. XIX.—No. 981.

Railway Appliances and the Public Health.

ALTHOUGH travel has ceased to be the formidable business that it was to our ancestors, it is still a matter that disturbs the even tenor of our way. It frequently entails upon us unusually early rising and a hurried breakfast; and always a certain discomposure, arising from fear of leaving anything, that should have been remembered, unsaid or behind; and from a desire to be in time. This is commencing a journey in the least complicated manner. If there are ladies and children to be escorted, more serious difficulties have to be surmounted, and the traveller's frame of mind becomes proportionately unstrung.

Perhaps railway arrangements are more trying to the British temper than those of any other institution; for it is noticeable that in many cases all the social graces appear to be discarded the moment a Briton, whether he be of high or low degree, becomes a railway passenger. First-class seats himself, wrapped in a gloomy reserve; and, oblivious of the rest of his race, is visibly intent upon obtaining a whole carriage to himself. Second-class enters his compartment with a broad stare, throws himself into a corner, and concentrates his attention upon the nearest window. If this be open, he closes it: if it be closed, he opens it. Third-class comes in slowly, edgewise, with a bundle; looks all round, and spits upon the floor. All these are unconscious of the cares of luggage. If First-class have any, his valet is responsible for its simultaneous arrival with themselves at the point of destination; or the porters have pounced upon it, and expectantly informed him that it is "all right." Second-class packs his own luggage into a square black shiny bag, neatly fastened up with a strap, and provided with handles, and never relinquishes a hold of it till he is able to deposit it between his knees below his seat, which he does as soon as he has altered the temperature of the carriage to his mind. Third-class, masculine gender, never has any luggage: it is an incubus peculiar to the female mind. Dames, as railway passengers, whether first, second, or third class, sink all the obligations of life in a vigilant care of their luggage. They eye porters, guards, and passengers with one general suspicion; and not until the train is in motion can they believe that they will depart without detecting some nefarious attempt upon trunk or bandbox. Infants, infirmity, old age,—conditions that in ordinary life call forth our tenderest consideration,—are looked upon as interloping nuisances. All are alike utterly selfish. In omnibus travelling, when a lady or an infirm person appears at the door, several hands are held out to assist the intruder in effecting an entrance; but no such courtesy is practised by railway travellers. Of course there are exceptions, but as a general rule, every one for himself, and *sauve qui peut*, form the by-laws of the passengers. In this way, every one is conscious of a departure from his usual habits, and of a consequent disturbance of his general health. It behoves, then, the directors of railway companies to bear this abnormal state of their passengers in mind; and to provide, as best they may, by contrivances and conveniences, a mitigation of the discomforts and disorders of travel. For many years it was judged impossible, and injudicious even if it were possible, to furnish the engine-drivers with any protection from wind and weather; and, just so, it has hitherto been deemed expedient to make second and third class travelling as uncomfortable as possible. But the engine-drivers have since been furnished with a screen from the wind, which is pierced for two large spectacles; and on the railways which diverge from Carlisle they have been further cared for by the provision of a covered hood with sides, which consideration has been attended with beneficial results. It may be of service to inquire how far the same progressive system might be applied to the benefit of the public.

In the first place, let us consider the arrangements at booking-offices and stations at some of our large towns. At Sheffield, the door into the Midland booking-office is exactly opposite the door on to the platform, and midway in this channel of traffic is the pay place; so what with passengers rushing about, and others mobbing the tiny gap for tickets, and the porters wheeling luggage in and out, there is a bewildering confusion. At Lancaster there is the same arrangement, with an additional complication rendered by the same pay-place being used for the issue of tickets for first-, second-, and third-class passengers, and for the common passage for both arrival and departure. The scanty accommodation, only equal to that of a village station, is still more apparent upon the platform, whence passengers have to cross the rails in the uncovered station, and dodge between up and down trains arriving at the same time, whilst a luggage-train is hissing and wandering about the lines between them. The narrow escapes at this station have been marvellous. Before quitting it, we may add that the urinals are bad here, as there is no front slate division, or trough, but merely a small channel in the pavement, and water dribbling from a pipe; the smell is very offensive; and the pavement always wet. Neither are the closets what they should be; and all are badly lighted both by day and night. We are forced to speak plainly.

At Normanton, where the night mail passengers, travelling both to the north and south, are turned out to change, and detained two hours in the middle of the night, the station accommodation is, and has been, we know from experience, for years of the most contemptible and temporary character. The platforms are so narrow that, in the bustle of the interchange of mails and luggage, it is difficult to keep whole shins; and the utter want of provision for the comfort of passengers is most provoking. It is a matter of surprise that the public have submitted for so many years to such scornful neglect as that met with at this vilest of junctions.

Where the iron station of the East Lancashire joins the wooden shed of the North Union Railway at Preston, the entrance for departures to such important places as London, Birmingham, Liverpool, or Manchester, is actually through and in a coke shed; and the whole station and waiting-rooms are pervaded with fine coke dust to a very grimy extent. The wooden roof of the station is so low that a porter arranging luggage on the top of the carriages has to dodge between the tie-beams, and is in imminent danger of losing his head, by the jerks of coupling of carriages, or should the engine-driver cause the train to make the least movement. The book-stalls at the departure side for Carlisle are very much in the way. These useful adjuncts are placed where the platform is narrowest, and close to the booking-office loungers about them impede the free passage of luggage and passengers, and make confusion worse confounded. Here again the closets are in a most filthy and discreditable state—black with coke ash and cobwebs, without light and without water. These accommodations should be one of the first considerations of railway management: they should be thoroughly lighted, both in the day time and at night; well ventilated; and kept scrupulously clean. The excitement and worry of travelling, and the change of air and irregularity of diet, are frequently the cause of diarrhœal tendency; and every possible convenience should be consequently provided for men, women, and children. The accommodation of this kind at the central Newcastle station may be well commended for an example, the building being extremely lofty, and well ventilated, and the apparatus self-acting. Chloride of lime is freely used as a purifying agent, being sprinkled over the backs and sides of the slate compartments, and on a portion of the pavement. The closets here, however, are insufficiently lighted by day.

At the handsome station of Carlisle—so well ordered in many respects, with its wide roomy platforms, drinking-fountain and filter, handsome Gothic banqueting hall, refreshment-rooms, and waiting-rooms, with printed directions on the doors to each, that none but first-class passengers should use the first-class room; none but the second-class passengers the second-class rooms: and, with framed notices, to beware of pickpockets, and that the company will "not be responsible for luggage left on the platforms or in waiting-rooms,"—the urinals have the splashy channels on the pavements, and nothing but a useless, dangerous, spiked iron-bar, where the running water in a trough should be; and the doors to the closets are without any privacy, opposite to these, and the whole are badly lighted with borrowed light. At Derby, at Berwick, and at Windermere, these conveniences are all dirty, worn out, and ill-devised. At the Snow-hill station of the Great Western Railway, at Birmingham, the great temporary wooden shed has not yet been superseded by the permanent structure that two or three years ago was thought likely to eclipse its mighty rival, the North Western in New-street; and the temporary urinals on the upside have all these years been but temporarily divided from the parcels or left-luggage office, by a thin plank; and the clerks, oppressed by the terrible stench, have been heard to express a hearty wish for a visit from a nuisance inspector or a board of health. The new station at Darlington, for many years likewise of a temporary character, on the other hand deserves great praise. It has been entirely rebuilt, with the great and useful feature of an enormous platform, admitting of free motion, and from which the various offices and rooms are easily discerned: indeed, all the accommodations are of a satisfactory description.

Next let us consider the classification of passengers. Felons in custody of policemen, and madmen in charge of keepers, are commonly conveyed by second and third-class carriages: however undesirable as fellow-passengers, they are not necessarily in an unsanitary condition; but the case is different with regard to reapers. For instance, a whole tribe of Irish reapers, every individual of whom was armed with a murderous-looking sickle, was recently crammed into a carriage on the Great Western line, in which were two other occupants, a young lady who might have been a timid governess travelling to her situation, and a well-dressed middle-aged man. The clothes these Irishmen wore had probably never been taken off during the whole harvest season, as reapers are given to sleeping in outhouses; and every man on entering gave utterance to a fiendish, Ojibbeway howl, and brought out his pipe and smoked. Again, on the Lancaster and Preston line, as the train nears Preston, the car-

riages gradually fill with the working classes,—decently behaved folk. Only the other day two foul-mouthed, foul-smelling navigators were introduced into a carriage full of respectable third-class passengers: they had not been seated many minutes before one of them,—but we must omit the detail. Country clergymen, with small livings, sometimes are necessitated to travel third class; but there is no just reason why they should be cooped up in a small space with a shepherd and his musky-smelling collie dog, or with a gamekeeper carrying to a country seat two young badgers in a hamper. These instances point to the want of a compartment in third-class carriages, set apart for such rough customers. Take another case,—in second-class carriages. After travelling all night from the North, and paying a fifty or sixty shilling fare, the door of the compartment is opened in the chilly dawn, and a lot of working men, in their working clothes, are thrust in, in greater numbers than there are seats for. This is a common practice by the night-mail on the North Western, and may be looked for as a matter of course on nearing London early on Monday mornings. Being so usual an occurrence, there is less excuse for the absence of proper provision for both parties. It is as unsanitary for the artisans to be crammed into a small compartment in which a couple of travellers have been shut up all night, as it is for the occupants of it, who have paid a second-class fare, and naturally expect some degree of comfort, to be thus roused and chilled, and then stifled.

Another annoyance, in a second-class carriage, that might be avoided, is the transit of railway officials (probably timekeepers), who let themselves in and out with keys at every station. A carriage full of passengers was thus disturbed in the course of a ride from Newcastle to Carlisle about twenty-one times; and, as there is no fast or through train on this line, there is no option at present but to put up with similar inconveniences. First-class carriages are by no means exempt from more serious horrors; but these fall generally upon unprotected ladies.

The seats of second- and third-class carriages might be made generally much more comfortable: those of the second-class on the Newcastle and Carlisle line, and a few on the Great Northern and North Eastern, may be excepted from this suggestion, as they are already comfortably cushioned both on the seats and at the backs. But this exception proves the practicability of the suggestion, as do the carriages on foreign railways. Consider the biting cold of a winter's journey, with nothing but a thin plank between the passengers and an atmosphere several degrees below zero. Consider, too, the punishment of being jolted, tossed, and churned upon hard boards, in second-class carriages of express mail trains, particularly in the dead of the night, as in the ride from Leicester to Chesterfield, when there is no stoppage: the speed is that of fifty miles an hour, the last carriage lightly laden, and there is no break-van! This same frightful oscillation is also noticeable upon other lines, and is attributed by the stricken passengers to imperfect springs or imperfect screwing up of the same.

Some carriages are still without ventilation. It is hardly necessary to say that every carriage should be properly ventilated, quite independently of the likes or dislikes of individuals to effect this object by means of the windows. This sanitary necessity should be arranged so as not to incommode any occupant, but to be a benefit to all; when the windows could be left to the management of caprice with less injurious results.

The warming of carriages is a subject that we may confidently expect will be speedily taken into consideration; as a scheme has been broached which proposes to heat all the carriages in a train with the waste steam from the engine. This clever and economical adaptation, as we recently mentioned, has been tried experimentally by the London and North Western at Wolverton, with satisfactory results. The warming of waiting-rooms requires a word. In most of these the fire-places are flush with the wall, as in ordinary house rooms, so that but a very limited number of persons can approach them at a time; but at Oxenholme, and a few other places, open fire-place stoves project into the room beyond the chimney-breast, and are surrounded by stone fenders about six feet long and wide, upon which a great many persons can warm their feet at once. Fire-brick backs, sides, and hearths give out additional heat; and this, therefore, is an excellent arrangement that might be extensively developed with great advantage.

The conveyance of fish trains by the night mails can scarcely be considered a salubrious arrangement for the passengers; but if they were always attached to the end of the passenger carriages the evil would not be of much account except in hot weather. But flashing past the telegraphic posts at rapid speed on the North Eastern railway, and dreaming of contingent accidents, the companionship of live lobsters and crabs, cods, herrings, and haddocks, with a fishy smell pervading all the carriages, appears an additional disagreeable.

The want of communication between the guards, passengers, and engine-driver is an acknowledged piece of gross neglect; and it is to be hoped that among the railway appliances the forthcoming International Exhibition may call forth, this very important particular may be developed. The mere exhibition of such contrivances will be of service, as it will show the public that man's ingenuity does not stop short at this stage, and that it is solely owing to railway parsimony that life is frequently lost and still more frequently jeopardized. Extra care is, perhaps, most required in excursion trains. On the Great Western, a short time since, roused by a piercing scream of the engine whistle, the passengers looked out of window and saw that the engine was ploughing up stone and gravel in an extraordinary manner. The train was brought to a stand still, and a large iron bar disentangled from the wheels of the engine; having been caught up from the line, across which it had been probably placed wilfully. After a rapid survey of the engine, the driver started off again at full speed, regardless of consequences; only alive to the fact that it was an excursion train, in the way of ordinary traffic, and must be got out of the road at all risks. Had the bar caught in the wheels of a passenger-carriage or of the guard's van, a casualty might have occurred, as neither passenger nor guard could have communicated with the engine-driver: as it was, the screams of the engine-whistle made the guards at both ends of the train put on the breaks, and the train was thus timely brought to a stand still. As we frequently see rewards posted up for the discovery of persons placing impediments on the line, we may assume that this diabolical trick is not an uncommon one.

Excursion trains require considerably more attention. In the first place, the trains that are sometimes forty carriages long are made up of superannuated vehicles that are too old and shabby for the regular traffic, with a blind trust in chance that the said carriages will be able to bear the journey in safety; and not enough supervision is exercised by the guards in the matter of the comfort of the orderly passengers. An excursion-train from Newcastle to London occupies eighteen hours: the compartments are crammed, and smoking is tacitly allowed. In one compartment of a carriage in a recent return trip from London sat eight people and two children. Two tall strong north countrymen out of the number began, directly the train started, to eat and drink and smoke, and smoke and eat and drink, which varied performances they carried on without interval for the whole eighteen hours. A female passenger, the postmistress of a large town, was made so terribly ill by the smoke, and her modesty so outraged by the consequences of her illness, that she wept for shame. A closer scrutiny should be exercised as to the practise of smoking among the passengers.

The gourd-like growth of the railway system requires a corresponding attention to sanitary appliances and conditions;—covered stations, so that passengers should not get damp and wet-footed on entering, changing, or quitting carriages; waiting-rooms, made warm and comfortable in the winter, and clean and cool in the summer; roomy and conveniently-disposed booking offices and platforms; well-ventilated carriages, properly cushioned, and more liberally supplied with daylight by means of a freer use of plate glass at the sides and angles of the carriages; and well warmed in cold weather, and well lighted at night with something more efficient than the old-fashioned oil lamp-lights now in use that are frequently extinguished on the road; a well-organized communication with the guard and of the guard and driver; good self-acting closets at every station, made very light and kept scrupulously clean; contrivances to do away with, or deaden, as much of the noise as possible, as well as of the oscillation and jerking of the carriages; and an efficient system of breaks and signals not likely to be continually out of order. Not the least social benefit that we might expect from the International Exhibition would be such introductions based upon our thirty years of railway experiences as would insure the comfort, safety, and health of the public on railways.

ON THE MODE IN WHICH LIGHT WAS INTRODUCED INTO GREEK TEMPLES.*

In the year 1849 I had occasion, while writing an essay on the "True Principles of Beauty in Art," to examine into the modes by which light was admitted to Greek temples; and on the very threshold of the inquiry I became absolutely convinced that the usual theory of supposing that it was done by a hatchway or hole in the roof could not be a true or correct representation of what was done by the Greeks.

So far as I knew then, or now know, the North American and North Asiatic savages are the only people who adopt this mode. They do make holes in the roofs of their wigwams, by which the smoke goes out and the rain comes in; but it was inconceivable to me that a people so ingenious and so refined as the Greeks should have found no better mode, while every other people on the face of the globe (except these savages) have done so. It appeared still more incredible that they should have taken the trouble to place chryselephantine statues in these practically roofless buildings, and most improbable that, after six centuries of exposure, Pausanias should find these delicate fabrics nearly, if not quite, as perfect as when they came from the *atelier* of Phidias. These things appeared to me impossible; and, as I have not that thorough contempt for Greek art which is professed by Mr. Ruskin and others of that school, I cannot bring myself to so low an estimate of the Greeks, or of their artistic capabilities, as to suppose that they alone, of all the nations of the earth, could not put a water-proof roof on their buildings.

In this opinion, however, I stood alone. Authors who were never tired of inditing eloquent paragraphs about the beauty of Greek art, were contented practically to rank the Greeks themselves among the lowest of savages; and insisted that the rudest and simplest mode—merely cutting a hole in the roof—was all this unfortunate people could devise for letting light and air into their temples.

Not being able to subscribe to this low estimate of a people whom I really admired, I set myself to examine such remains as might throw light on the subject. I soon found that most of the temples—all the larger ones—had double rows of columns in their cellars, which, frequently at least, were not wanted for roofing purposes; and that many still retained staircases leading to something *under* and not *on* the roofs. It could not be to galleries, for the remains proved that such never existed. Still I felt convinced they were not put there without a good and sufficient motive; and on examining further it became clear to me that these pillars could only be connected with the mode of lighting; and, on further looking into

* Read by Mr. James Fergusson at the Royal Institute of British Architects, as elsewhere stated.

it, *that they in fact supported a clerestory*, or what you will perhaps allow me to call an "Opaion," as contradistinguished from an Hypæthron. The latter word is never, as I shall presently show, applied by any author to Greek temples. The former is used by Plutarch, in speaking of the temple at Eleusis, and also apparently occurs in two inscriptions. And lastly, I felt convinced that the stairs were meant to give access to those whose business it was to close the shutters or draw the curtains connected therewith.

These opinions were, to say the least, very unorthodox, not to say heretical; and, coming from an unknown author, might safely be treated with contempt. Truth, however, is eventually even stronger than contempt; and somehow or other, after thirteen years of silence, some have begun to suspect that there may be something in these views. But the best sign of vitality is that a first-rate authority has, when no one was saying a word about the matter, written a pamphlet to prove how utterly absurd and untenable they were. So long as this was not done, it was in vain to attempt to move in the matter: it was mere fighting with shadows; but now that the case is stated by a gentleman of Mr. Falkener's acknowledged ability, and who has devoted so much time to the subject, and is so well qualified in every respect to give an opinion regarding it, there is some ground to go upon; and if I can give a good and satisfactory answer to each and all of his assertions, a great step will be gained, and the two sides of the case put fairly before the public; so that they may judge who has the best of the argument.

In doing this I shall not attempt to follow Mr. Falkener through every paragraph of his indictment in the order in which he states it; but shall divide my subject into the three heads under which it naturally falls, noticing his subjects incidentally as they occur.

1st. I shall first examine the *written* authorities as to the mode in which Greek temples were lighted.

2ndly. I shall examine such *remains* as exist, or throw any degree of light on the matter; and,

Lastly. I propose to treat of the general *probabilities* of the case.

I need hardly say that the principal and, indeed, the only direct authority regarding the lighting of temples is Vitruvius, and the only passage bearing directly on the point is one in the third book. After describing with clearness, and without difficulty, the arrangements of temples,—prostyle, amphiprostyle, peripteral, pseudodipteral, and dipteral, he goes on to say:—"An hypæthral temple has ten columns in the pronaos and posticus: in all other respects it is similar to the dipteral. Within the temple there is a double tier of columns on each side, detached from the walls. The middle area is without any covering, and open to the sky [*sine tecto et sub divo*], and the cella is approached as well through the posticus as the pronaos. There is," he adds, "no temple of this description at Rome, but at Athens there is an octastyle in the temple of Jupiter Olympius."

The first part of this paragraph is perfectly clear, but there is a positive contradiction in the latter part which renders it nonsense as it stands. He first states that an hypæthral temple is decastyle and dipteral, and then quotes an octastyle, which, as far as we know, was not dipteral. The MSS. all have the word "octastylos," so there is nothing to be had from this source to explain the difficulty. Wilkins conjectures,—and, I must confess, with considerable plausibility — that "octasty-los" is an original *miscopy* for "*In asty jovis*," which is possible, but it is not worth while going into the matter here. One thing we may feel certain about, which is that the passage does not now stand as Vitruvius wrote it: he could not possibly contradict himself so absurdly in the same paragraph; and we may feel morally certain that the temple he did allude to was the Temple of Jupiter Olympius at Athens, which was decastyle and dipteral, and, so far as now known, the only temple of that sort then existing in Europe; and it is consequently to that temple, and to that alone, that the words "*sine tecto et sub divo*" can be made to apply.

From the immense height of its order, nearly 70 feet, it must have been extremely difficult to light it through the roof. If by an opaion or clerestory, the sills of the windows would have been 70 feet from the floor; and, consequently, it was in this case necessary to introduce light through the walls of the cella. But as windows could not be admitted under the peristyle, it became further necessary to allow the temple to remain "*medio sine tecto et sub divo*,"—in other words, to introduce a courtyard in its centre. This I explained in the work above alluded to, and it is shown in the diagrams on the wall.

It is needless here to follow the examination of the paragraph further; for, to be of any use to the advocates of the hole in the roof, the passage ought to have stood thus:—"There is no example of this at Rome, *but all Greek temples are so lighted*." For it is quite evident that they were all lighted in one and the same manner. Had there been any varieties, they could hardly fail to have been remarked by either Vitruvius, Strabo, or Pausanias. It is not that; and no twisting will make it so. So that it has really no bearing on the present discussion, which is confined to Greek temples.

I would also remark, that Vitruvius had a very imperfect knowledge of the Latin language if he called a temple with a skylight in a roof "sub divo" and "sine tecto." Would such an expression be correct if applied to the Pantheon at Rome? Has that building no roof? Would he not have said that it was covered by a *tholus*, or roof, as the case may be, with a square or circular opening into it?"*

But this is not all. In another paragraph, quoted by Mr. Falkener, Vitruvius explains to us what he means by hypæthral openings. In describing the porticoes at the back of an ancient theatre, he says that the square enclosed by these porticoes was open, that is, hypæthral. "Media vero spatia quæ erant sub divo inter porticus adornanda viridibus videntur: quod hypæthræ ambulationes," &c.

In other words, what Vitruvius meant by an hypæthron was an open square or piazza, "sub divo," and surrounded by porticoes. This is a very different thing to a temple with a roof, and only a small opening in that roof.

This is still more clear from a third passage, in which he says, "Buildings [*ædificia*] which are *hypæthral* and *unenclosed* are erected to Jupiter Tonans, Cœlus, the Sun, and the Moon, because these divinities are certainly known to us by their presence, night and day, and throughout all space." A somewhat different turn is given to this paragraph by Mr. Falkener and Mr. Cockerell, who translate "ædificia" as "temples," but as Vitruvius always uses "ædes," or "templa," to designate enclosed buildings, and here purposely uses "*ædificia*" to designate the terrace or platform on which these statues were erected, like statues to the virgin or to saints in the open air in Catholic countries at this day, it only seems to make it clearer that "*sub divo*" must be translated "in the open air."

It may also be remarked that, in the passage just quoted, Vitruvius distinctly says that there were no hypæthral temples at Rome; and here his translators make him say that there were such dedicated to these gods. The contradiction is theirs, not his. Besides that, an *unenclosed* "*temple*" is a form I cannot realize: an unenclosed "*edifice*" is intelligible enough.

The god Terminus was, of course, worshipped *sub divo* and *sine tecto*, because it was his business to stand sentry at and mark the boundaries of estates, districts, or provinces. To put a temple over every terminal figure would have been absurd, and we know was not done; and, consequently, he came to be essentially an out-of-doors god. When the Temple of Capitoline Jupiter came to be enlarged, of course the boundary of the district could not be altered, or the Terminus removed that marked it; but, in conformity with usage, an opening was left in the roof above him, that he might figuratively, at least, be *sub divo*, as of old; but all this proves nothing as to how Greek temples were lighted, except that when Vitruvius speaks of hypæthra he means places "*sine tecto et sub divo*;" and, when he uses these expressions, he does not apply them to buildings which have roofs, and whose interior was not, consequently, in the open air.

It is needless going further into this subject here, as it has been practically exhausted long ago by Professor Ludwig Ross, whose long residence in Greece, coupled with profound learning and intimate acquaintance with the subject, renders him a most important authority on this subject. In his papers in his "Hellenica," he has shown, it appears, incontrovertibly, that the Greek word, "ὕπαιθρος," is used constantly in connection with the "Courts of Temples," with "Gymnasia," "Groves," "Market-places," "Periboloi," &c. It is, in short, used to designate any place that is "*sub divo*," and, consequently, is applicable to the Pnyx, but not to the Parthenon; and never applied either by Vitruvius or any Greek author to temples properly so called, except the one decastyle temple above alluded to.

These opinions were violently combatted, first by Bötticher, afterwards by Raul Rochette, in three very elaborate papers in the "Journal des Savans." He cannot deny the truth of Professor Ross's statement as to the use of the word, but he demurs on various grounds to his negative conclusion that consequently the light in Greek temples was admitted only through the doorway, and pleads forcibly for some opening in the roof to admit light, and to allow the smoke of the altars to escape. Had the suggestion of an opaion been then made, it would have reconciled both these authorities. At all events, I accept every word and every argument used by either, and only demur to the conclusions they draw. They differed only because they had nothing before them except the "hole in the roof," which the one would not accept, and the other could not defend.

But to return from this digression.

We have to thank Mr. Falkener for pointing out a passage in the Book of Maccabees, which certainly seems to bear on this subject. It is there said that, when Antiochus Epiphanes was entered with a small company into the compass of the temple [of Manea, in Syria], "they shut the temple as soon as he was come in; and, opening a privy door of the roof, they threw down stones like thunderbolts, and struck down the captain," &c. If the temple was arranged as Mr. Falkener proposes, they could only have got at this hypæthron by a ladder from the outside; and certainly the one opening through which all the light is admitted can hardly be called a "privy door;" but, arranged as I propose, the thing is clear enough. There was a private stair leading to the clerestory gallery; and, once there, they could command the whole interior with the missiles, and easily perform what they are said to have done.

I approach the next quotation with dread, for I am going to differ with a great German professor as to the meaning of a Latin word! Bötticher says the opening was closed in by a "stratura," or hatchway covering:—"Straturam loci alicujus ex tabulis factis quæ æstate tollerentur et hieme ponerentur,"&c. Now, in all the dictionaries I have access to, "stratura" is a pavement, and is said to be derived from "sterno," or "stratus." And how the covering of a skylight could be called a pavement, I am at a loss to understand; but I must say I cannot conceive a more perfect *reductio ad absurdum* than the idea of a set of Greek carpenters getting up on the roof of the Parthenon with a lot of boards, and battening down the hatchways of the temple, about the middle of November, and leaving poor Minerva in utter darkness till returning spring lets light and air into her dark abode! As I read the passage, it seems to me to say that a flooring of boards was laid down in winter and taken up in summer. But for fear of accident, I will not meddle with what I may not understand.

These seem to me the only really important passages quoted by Mr. Falkener as bearing on the subject; but lest I should appear to be slurring over any, I would remark that when Justinius uses the expression that Apollo leaped down "per *aperta* fastigia culminis," he meant to convey the idea that the *fastigia* were or happened to be open. "*Aperta*" would otherwise have been unmeaning, and *fastigia* being plural, seems to indicate that there were more openings than one.

The word "*opaion*," as applied to the temple at Eleusis, does not convey much meaning. I translated it as *clerestory*, and see no reason to change; but those who support the hole in the roof theory have either got to explain that "hypæthron" and "opaion" are the same, or to show in what they differ. In so far as we know anything of the form of worship in that temple, it appears to me impossible that the sudden changes from light to darkness could be effected with a horizontal opening in the roof. With vertical openings nothing could be easier; and this reason, in addition to those derived from the general considerations, appears to me sufficient to settle the question.

It is needless pursuing this inquiry into the *litera scripta* further, as it is in evidence that had anything been found in books which was capable of settling the question, it would never have been doubtful. Hundreds of competent learned men have already tried their hands upon the solution of the problem; and as none have succeeded

* So far as I know, the Pantheon is the only great building so lighted, and this mode was adopted evidently because of the daring novelty of the attempt to build a dome of such dimensions, and the timidity of the builders, who did not dare to weaken the building by lateral openings.

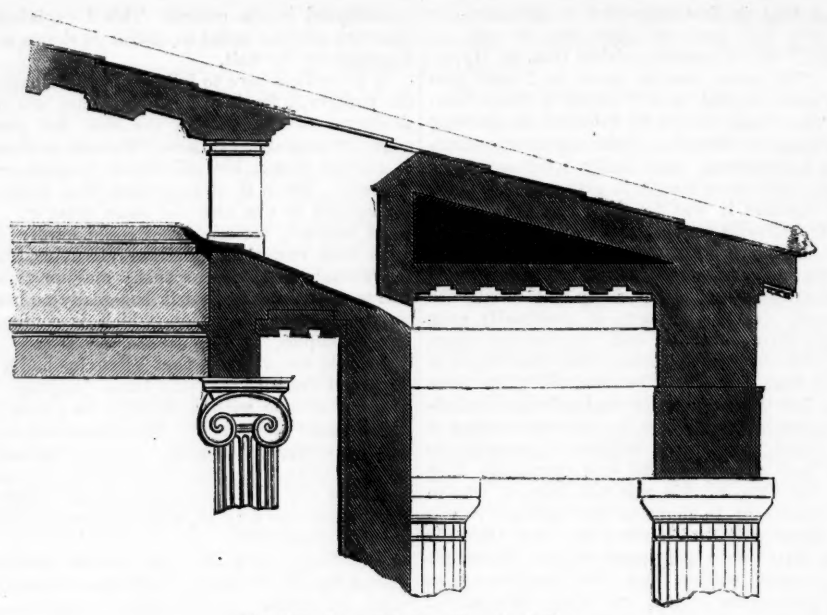
in convincing anybody, we may fairly assume that the materials do not exist for any definite conclusion from this source.

Let us now, therefore, turn to the second part of our subject, and see what light existing remains to be thrown on this "vexata quæstio."

I believe I am correct in saying that until the publication of Professor Cockerell's beautiful book on the Temples of Egina and Bassæ, no actual remains were known to exist which formed any essential part of the openings in the roofs of Greek temples. He and his companions, however, found on the floor of the temples two stones at Egina and one at Bassæ, which certainly did belong to such openings; but no indications as to their position in the roof. To Mr. Falkener's mind these are conclusive: "These examples alone," he says, "are sufficient to silence all future objections." With all due deference I would suggest that they are just as useful and necessary for my "countersinkings" as for his hatchways: in fact, though they prove, which almost every one admits, that the light was introduced through the roof, they prove nothing more; and I can employ the stones just as well as he can.*

But though these stones will not help us to a solution of the difficulty, there are other peculiarities brought to light by the learned professor's researches, which may do something towards it. We find, for instance, that the cell of the Eginetan temple was only 21 feet 3½ inches wide from wall to wall, and 42 feet 10 inches in length,—the size, in fact, of a first-class drawing-room; yet this apartment was crowded with two rows of columns, two stories in height, which reduced the central aisle to about 10 feet, and the side aisles to 2 feet 7 inches. They were not wanted to support galleries, for there were none; nor for beauty, for the two tiers of columns, standing on each other's heads, with only an architrave between, was not beautiful. It was not that the roof required support, for we find the Greeks at Athens carrying a roof over 32 feet clear space without difficulty, and in the Propylæa carrying a flat stone roof over spaces of nearly 19 feet in the clear. A wooden trussed roof of 21 feet span could thus hardly require contraction to 10 feet. It was not to support the "hatchway;" for cutting one-half out of the roof would lighten it, and it would therefore require less support. Indeed, looking at it from every point of view, I can conceive no motive for such an arrangement, unless it were intended to support an opaion or clerestory, or some analogous mode of lighting. You cannot have a clerestory either in Gothic or Grecian architecture without such a range of pillars; and I do not know of such a range existing, in so small a room at least, without carrying some such arrangement for lighting.

If we turn to the Temple of Bassæ, we find the same phenomena. Nothing can be more remarkable,—it may be said clumsy, if merely intended as ornaments,—than the mode in which the internal columns are first detached from the walls, and then re-attached by the buttresses at the back. The angle columns especially are awkward and anomalous, unless it was intended that their axis was to correspond with some external arrangement. The same is true of the pillars next the entrance, which are singularly awkwardly placed; and again, why was it necessary that the distance from centre to centre of the internal columns should be identical with that of the external? and that those in the interior should be placed exactly intermediate between those of the exterior? These things were no accident. Yet all this fitting and contrivance were thrown away if the mode of lighting was merely a hatchway in the roof, placed unsymmetrically anywhere, as shown in Professor Cockerell's drawings. It seems to me impossible to account for all this contrivance and misplaced ingenuity, unless the position of the interior columns could be seen from the outside of the building; and, so far as I know, this could only be done by some such arrangement as I have suggested. If we adopt it, we see at once that the angular position of the last column and the juxtaposition of the first to the doorway were requisite to afford a real or apparent abutment at either end of the *opaion;* that the three intermediate columns having buttresses were carried up to the roof, and could be seen outside, and consequently must be placed symmetrically, either between or opposite the external columns. In short, everything that looks so puzzling, and the reason for which Mr. Cockerell admits he cannot conjecture, becomes at once clear and intelligible, and no other suggestion has yet been offered which accounts for any one of them.



Sketch-Section of Opaion, Temple of Bassæ.

There is still a third peculiarity of Greek temples, which, so far as I know, can only be explained by the theory of an *opaion* or clerestory. Almost all the larger Greek temples had permanent staircases, like that of the Temple of Neptune at Pæstum, placed either on one or both sides of the principal entrance. These did not lead to galleries, for there were none: they could not be wanted for access to the outside of the roof; nor, indeed, can I conceive any other use for them than what I have suggested. Without an opaion, they appear to me inexplicable.

Before leaving this branch of my subject, I may mention here that further thought, and more especially the publication of Professor Cockerell's book, which for the first time has put us into possession of correct details of the temples he describes, have enabled me to correct some details, and to improve to a considerable extent the diagrams I originally published.

I should now be inclined to class Greek temples into three distinct groups:—

1. Small temples without any interior columns. These were lighted either from the front or by windows, or it may be, for anything known, by a hole in the roof. We have no facts, so any one may theorize as he pleases.

2. The smaller peristylar temples, such as those at Egina and Bassæ. Their opaions I would call "triglyphal," and I fancy had neither shutters nor curtains, and, consequently these temples required no permanent staircases to the roof, and had no roof galleries. Looking at the section, it will be seen first that there is no room for the latter between the top of the order and the roof; but, on the other hand, it is clear that no rain could under any circumstances beat in through the openings, and no sunshine ever reach within 10 feet of the floor or penetrate the temple at all, except for a very short time after sunrise, or before sunset; while, on the other hand, an ample supply of light would in that climate be admitted to make the interior cheerful, and to allow every object to be seen clearly.

3. The third class includes the Parthenon, the Temple of Jupiter at Elis, the great temple at Pæstum, and most of the Sicilian temples. These seem all to have had opaions of such dimensions as to require shutters or curtains, and consequently permanent staircases to the galleries of the roof. But, it may also be mentioned, that several of the smaller Sicilian temples, such as that of Esculapius, at Agrigentum, though only distyle in antis, had a stone staircase on either side of the doorway, leading to something that certainly was not an hypæthron, and may have been an *opaion.*

In attempting to estimate the probabilities of the case, the best mode will be to examine, in the first place, what was the practice of those nations who built temples before the Greeks, but with whom they were at the same time in communication. The only people who have left us sufficient remains to make us certain of what they did were the Egyptians; and it may be stated broadly, as an indisputable fact, that all the temples which the Egyptians built before the time when the Greeks took to building, were, without one single exception, lighted by a clerestory, or *opaion.*

It is quite true some of them, such as those at Luxor and Medinet Haboo, are so ruined that the opaion does not now exist; but all their arrangements are so similar to those that have clerestories, that it is impossible to doubt but that they also were so lighted. On the other hand, the Great Temple at Carnac has a clerestory that might be envied by any Gothic cathedral in existence. The Rhamession has also a beautiful one; so has the Temple of Thothmes III.; and so, also, have the two temples called the Greater and Lesser Southern Temples, at Carnac. The temples built during the domination of the Greeks and Romans were not so lighted; but that has no bearing on the subject of our present inquiry. It is sufficient for us to know that all the Pharaonic temples,—all those built before the year 1000 B.C.,—have this arrangement. No one, I presume, will be so Irish as to suppose that what was built afterwards influenced what was erected before; though in Mr. Falkener's book, and elsewhere, this is done through inadvertence.

But it may be asked, did the Greeks know of this practice of the Egyptians? Here, again, the answer seems to be on the surface. I believe no antiquary will now dispute that the Greeks borrowed the shaft, at least, of the Doric order, from the banks of the Nile. The proto-Doric examples found there are too numerous and too similar to admit of dispute on this point. But there is one peculiarity which it is interesting to note here. It is that the proto-Doric found above the Cataracts can only be considered as distant relations of Greek examples. Those found at Thebes are cousins-german,—those at Beni-Hassan are brothers; and, if we could continue the series to Memphis, I feel convinced we should find the Doric itself, scarcely differing from those we are so familiar with in Greece. I am inclined to this opinion, not only from the increasing similarity as we descend the Nile, but because, if I am right, that the real original of the Doric form was a brick or rubble pier, it would be in the delta that its prototype would be found, and not among the monolithic examples of Thebes or Nubia.

But this need not now be insisted upon. The Beni-Hassan example is sufficient to all present purposes, and, fortunately, we are not left to conjecture as to whether the Greeks knew of it or not; for we have in "Herodotus" an account of the temple built by the associated Greeks at Naucratis, in the reign of Amasis; and we know further that the very Eginetans, who built the temple to Jupiter Panhellenius, built one in Egypt to the same god about 560 B.C., and, therefore, as far as we can judge from the architecture, before the date of their native example.

That the Greeks, therefore, knew of it, can hardly be doubted. But before leaving Egypt it may be as well to inquire why the Egyptians adopted this mode of introducing light into their temples and halls, instead of the hole-in-the-roof plan, which our friends would try and persuade us was so much preferable. It is clear that any argument that can be adduced in favour of the latter in Greece applies with at least ten times the force on the banks of the Nile. No rain falls

* It is to be regretted that the Eginetan stones were not brought home; for, owing to their different depths, one being 8¼ inches high, the other 9¾, it is not easy to see how they could be used together on any system. There are also peculiarities in their shape which are very puzzling; but, as these have no bearing on the present subject, it is not necessary to enter upon them here.

there,—at Thebes scarcely twice in a year; their statues were of granite or basalt, and a shower would not injure them; and the paintings inside were the same as those outside, and having stood uninjured through upwards of two thousand years' exposure to the atmosphere, were not likely to excite much anxiety from any temporary dampness. There was no difficulty of construction: all that was required was to leave out certain stones of the roof, and it was done. It could be no deformity, for, the roof being always flat, it could not be seen outside. Why, then, did they not adopt it? The answer appears to me inevitable,—that it was a clumsy, barbarous expedient, which they were far too clever and too artistic ever to think of adopting.

Nothing can, to my mind, be well clearer than the fact that when the Greeks borrowed the Doric order from the Egyptians, they remodelled the entablature so as to suit and harmonize with the wooden structure of their roofs; and at the same time they modified the Egyptian mode of lighting in exactly the same manner, and to the same extent; and, if any one will try to reproduce the flat stone trabeate form of the Egyptian roof with the trussed wooden frames which the Greeks found it necessary to adopt, I shall feel surprised if he comes at a conclusion differing from that shown in the diagrams on the wall.

Being, therefore, familiar with this Egyptian mode of lighting buildings, why should not the Greeks adopt it? Mechanically there was absolutely no difficulty. As a convenient arrangement, the experience of the whole world, in all ages, proves that openings in a vertical wall are preferable to holes in the roof; and, artistically, I feel quite sure that any one who will think twice on the subject will agree with me that it is infinitely preferable.

Externally, I feel convinced that a break in the ridge of the roof,—a great gap or hole,—would have been an intolerable deformity; and so it has been felt to be by all modern restorers, who have invariably filled it up. On the other hand, the opening in the sides would have relieved the monotony of the roof, without disturbing the lines.

But it is more with reference to the interior, and the lighting of the works of art which the temples contained, that it must be judged. Volumes have been written, and Mr. Falkener occupies a considerable space in his book, in describing the charming effect of high lights and hypæthral openings on statues. But all this is wholly beside the mark. He, and those who agree with him, are speaking of white marble statues, of life size, or slightly larger; and these do depend wholly for their light and shade, for their expression and accentuation, on having a light above them, falling at some peculiar angle; but with these we have nothing to do here. What these Grecian temples contained were colossal chryselephantine coloured statues, which consequently did not depend on light at a particular angle for their effect; and, if they did, would not have got it by the ordinary hatchway arrangement.

If the Minerva of the Parthenon or the Jupiter at Elis had been statues of life-size, and of white marble, I am not prepared to deny that they might have been effectively lighted by a hole in the roof, provided the hole was filled with ground glass, or had always a blind before it; but I am convinced that the wandering sunlight that would otherwise have come through would have been absolutely fatal. In the early morning it would have fallen on the figure, at noon on the north wall, in the evening full in the eyes of the unfortunate votary who came to pay his devotion. Greece has a sunny climate, and a different brilliant effect every half-hour is scarcely the "singleness of effect" a sculptor would desire. But when we come to talk of a statue 50 feet high in a temple the roof of which is only 5 feet higher, and propose to light that statue by an opening in the roof 20 or 30 feet in front of it, we get into an almost inconceivable difficulty. Besides the wandering light just spoken of, the feet of the statue would always be brilliantly lighted, the legs fairly, the body would be in shade, and the head—the part on which the Greek artists lavished all their care—would always have been in deep shadow; in fact, never visible. Is it probable that this should be so?

I have not the least doubt in my own mind that if all the conditions of the problem were put before any sculptor, or any one accustomed to think how sculpture should be lighted, that he would arrive at the same conclusion that I have done. He must bear in mind that the flesh parts of the statue were of ivory and coloured, the eyes precious stones, the hair gold or coloured, the figure of wood, draped with cloth covered with gold and other ornaments, and the whole thing a mass of bright and gorgeous colouring; he must also bear in mind that the statue almost touched the roof of the apartment in which it was placed. I cannot conceive that there is any one but would say that what was wanted for such an object was a diffused steady light, sufficiently high not to be in the spectator's eye, and at such a height as to light the upper and not the lower parts of the figure.

It is hardly necessary to allude to what is said by Mr. Falkener and others about the necessity of a single high light for pictures, with which these temples are supposed to have been adorned. They are reasoning regarding modern oil paintings, with their shining surface of varnish. The Greeks did not paint in oils, and did not varnish their pictures; so all this reasoning is inapplicable. In fresco or encaustic painting, what is wanted is as much light as can be obtained, and as diffused.

Lastly, with regard to the architecture, a skylight or opening in a flat ceiling throws the whole of the rest of the roof into shadow, and is as disagreeable an arrangement for architectural effect as well can be imagined, and I feel perfectly certain no Greek would tolerate it for one minute. But this defect, as well as all those of lighting the paintings and the numerous works of art, as well as the great statues, are remedied at once by the adoption of the *opaion* or clerestory.

Before leaving the subject, it may be well to allude to one or two minor points which are of no real importance, but, if not answered, may be magnified into serious objections.

It is assumed that the *peplum*, so often mentioned in the account of these temples, was nothing more than a curtain or blind to keep out the wet. In all the dictionaries and books of antiquities that I have consulted, "*peplum*" is translated *shawl*, and certainly was sometimes, if not always, an article of dress. My conviction always was, and, I must confess, still is, that the *pepla* found in temples were robes which were on certain occasions used to drape the statues. But, if it be contended that this was not so, it must, at least, be admitted that they were always most elaborately and richly embroidered, being covered with figures of men and animals, and in the richest materials. Such an elaborate and expensive piece of workmanship certainly never would have been used to keep out the wet and the weather. If they had been so used, Pausanias certainly would not have found them, after 600 years, hardly the worse for wear. They must, in fact, have been preserved with the same care as the embroidered *pepla* of our Mediæval cathedrals; and, if I mistake not, were similar both in form and use.

The *parapetasma* was a curtain that was hung in front of the effigy of the deity, and it is perfectly consistent with what we know of the form of Grecian worship, to suppose that the great effigy was not always exposed to the gaze of every one that entered the temple, at all times and all hours; but was concealed behind a curtain except on high days of festival, or when some one could pay for having the curtain withdrawn; but in order to enlist the parapetasmas in favour of the "*sub divo*" theory, it is necessary to point to some passages where it is mentioned that it was used and useful for that purpose, or some allusion that would justify the assumption that it was so. I am not aware of any.

The last objection I shall allude to is one pointed out by Mr. Falkener, who says that the Parthenon is "*displuviatum*," like the houses at Pompeii and elsewhere; and, consequently, must have been "*sine tecto et sub divo*," like the courts of those houses. So far as I know, the impluvium of those houses was generally 1 foot or 18 inches deep; and would, therefore, contain the rain which the roofs were made to drain into it. Mr. Falkener states the impluvium at Athens to be 3 inches deep; on what authority I do not know. Mr. Penrose makes it from ·125 to ·127, or just half that extent, and this makes all the difference: 3 inches is a step; the foot would rest across a rising of one inch and a half. Perhaps it would be more correct to say, "*disanguiniatum*," if I may be allowed to invent such a horrid word. If sacrifices took place in the temples—and there seems no reason to doubt that they did—a ledge of this sort would be needed to prevent the blood spreading everywhere. But the correct explanation probably is, that this sinking is just what we should look for from Pausanias's description. He tells us, that the site of the temple at Elis was so moist, that they were in the habit of pouring oil on the pavement in front of the statue, to absorb the moisture; but, on the contrary, at Athens, where the site was high and rocky, they poured water on the pavement in front of the statue, lest the ivory should be injured by the dryness of the place. From this we learn, in the first place, the extreme delicacy of these statues, and the care that was required to keep them from going to pieces; and in the next the extreme improbability, not to say impossibility of their allowing the rain to pour in at times when the atmosphere was surcharged with moisture, or the sun to blaze in during the hot winds which prevail in Greece. In fact, the power they had, by the precautions mentioned by Pausanias, of regulating the hygrometric state of the temple, is to my mind sufficient to prove that their temples were not "*sine tecto et sub divo*," as our learned friend would have us believe.

The proposition, therefore, which I have to submit for discussion is reduced within very narrow limits. I assume, in the first place,—what I fancy no one now will dispute,—that the light of day was admitted into Greek temples. We know it was not admitted by windows in the walls, and we may take it for granted that it could not be admitted in sufficient quantities through the doorway. Being therefore admitted through the roof, the question is, was it admitted through a horizontal hatchway, or through a vertical clerestory? You have to choose, in fact, between an hypæthron and an opaion. I do not know one argument for the former. I hope I have adduced a few in favour of the latter. Still I may be mistaken, though twelve years' reflection seldom leaves a man in full possession of any hallucination he may have indulged in at the earlier period. But it is for you to decide, and I shall be glad to hear what can be said against the views I have had the pleasure of laying before you.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary meeting of members was held on Monday evening last, at the House in Conduit-street. The chair was taken by Professor Donaldson, vice-president.

The minutes of the last meeting having been read and confirmed, and several donations announced by the honorary secretaries,

Mr. James Fergusson read a paper "On the Mode in which Light was introduced into a Greek Temple." (This will be found in another part of our impression.)

At the conclusion,—

The Chairman observed that, as the subject was not only difficult, but interesting, and had long been a stumbling block to architects, he hoped that some of the gentlemen present (than whom none were more competent), would give their opinions upon the able and carefully prepared paper which they had just heard read.

Professor Cockerell said he was not sufficiently acquainted with the views for which Mr. Fergusson contended, to be able to follow him; as, although the latter gentleman had done him the honour to ask him some questions on the subject, the arguments which he had adduced that night were new to him. Hearing them for the first time, he confessed they had staggered him. He was not acquainted with the Egyptian temples to which Mr. Fergusson had called attention, but he thought there was a good deal of matter for reflection in his suggestion; and, should they turn out to be feasible, much credit would be due to him for throwing light upon a theory which did not appear to have any exemplars to support it; but which, nevertheless, might be based upon truth. He had himself, in the course of his researches, found stones and fragments, such as copings, &c., which appeared to him to favour the hypæthron theory; but he had not been able to trace any to satisfy his mind that the temples were lighted from the roof. He admired, as he was sure they all did, the learning and application which Mr. Fergusson had brought to bear upon the subject; but he confessed he would have been better pleased had that gentleman been able to adduce any fragments, paintings, or other proofs, such as existed with reference to the Pompeian temples, to show how the architects of the Greek temples introduced their light. As at present advised, he was not able to say more than to express his acknowledgments to Mr. Fergusson, for the very able and learned disquisition which he had prepared with so much care and delivered in so lucid and interesting a manner.

Mr. Fergusson observed that Professor Cockerell had spoken to finding stones and other fragments which he thought calculated to favour the hypæthron theory; but he (Mr. Fergusson) was prepared to contend that such discoveries

were equally applicable to the theory which he had endeavoured to set up.

Mr. Penrose said he could not pretend to have paid any special attention to the subject; although, at the same time, the theory urged by Mr. Fergusson was not entirely new to him; as ten years ago he had been led, by a perusal of "The Principles of Beauty and Art," to look into the subject. The theory there expounded was, in his opinion, the only plausible one put forth. He had been struck by hearing that Mr. Fergusson claimed an equal right to the fragments discovered as throwing light upon his peculiar theory as well as upon that usually received as the most worthy of attention.

Mr. Bell observed that he had considered the subject with great attention, amusement, and, he hoped, advantage. He did not speak as an architect—for he possessed no architectural knowledge—but as a sculptor; and he had no doubt that the statues in the Greek temples were made of materials which would not bear exposure to the weather. A statue, for instance, made of a thin veneer of ivory, on a core of wood, could not last any time unless there was a substantial roof to shield it from rain and tempest. He quite agreed with Mr. Fergusson in what he had said about the distinction between coloured and plain statues. A statue which was of white marble would, for instance, require the light from above; but if it were coloured it would not. He would like to know whether Mr. Fergusson had ever prepared any model to guide him in his conclusions. Wilkie, the painter, and other artists, used to make a box containing little figures, modelled to represent the groups they intended to paint, and the light in which they were intended to be depicted. Now, if a little model of a temple were made with the light introduced in the manner for which Mr. Fergusson contended, small statues might be placed in it, and the effect could be seen. It would also serve to show whether coloured statues could be well lighted up, as he supposed such statues were in the temples of Greece. There could be no doubt but that there was a desire on the part of the Greeks that their statues should have a good light; and it would therefore be satisfactory to know whether Mr. Fergusson had put the mode of light for which he contended to the particular test suggested.

Mr. Fergusson replied that he had not done so, because the subject had not been sufficiently taken up by the public to warrant the experiment. He feared, however, that the small model suggested by Mr. Bell would not give the effect required; as, in order to make the experiment satisfactory, it would be necessary that the head of the operator should be in the same light as the temple.

Mr. Bell.—But it might give some idea.

Mr. Fergusson.—Yes; but it would not be a fair test.

Mr. Lloyd said he was to some extent familiar with the question, in consequence of having read Mr. Fergusson's book when it first came out. At that time he was very much captivated with his theory, but in the interval that had since elapsed he confessed he found himself veering rather in the other direction; but, now that he had heard Mr. Fergusson and had seen his illustrations, he felt inclined to veer round again and to adopt his view; as he must say that he had made out an extremely strong case, and one which he (Mr. Lloyd) confessed he was quite incompetent to argue against. With regard to the model suggested by Mr. Bell, he thought that, in order to do justice to the experiment, it would be necessary to try it in a room of dimensions equal to those of the temple itself, and also to have the sun of Greece to try it by, which was not a matter of very easy accomplishment. Those who had travelled in Italy could not have failed to have been struck with the effect which a very small window had in lighting a room, so clear and so diffuse was the light from an Italian sky. This circumstance made him think that, if the opening were carried the whole length of a colonnade, there would be too much and not too little light in the building. In Egypt they had no windows, but they had a vertical sun, and the object of the roof was to keep out the hot sun, and not to exclude rain. The objection to the direct light of the sun would not be so great in Greece as in Egypt, for in the former very little vertical sun would come through an opening inthe roof. With respect to the relation between the interior and external columns in the Temple of Bassæ, as shown in the ground plan exhibited by Mr. Fergusson, he was of opinion that they must look further for the solution than the suggestion made by that gentleman; and that the spacing was either accidental or the result of a general arrangement of the proportions of the building. With regard to the paper just read, it seemed to him that it did not exactly correspond with the title; for it was found that the hypæthron was, after all, an *opaion* or clerestory. If this could be established, it would be a very valuable piece of information. He was of opinion that monumental evidence existed on the subject beyond that which had been cited. Many were, in fact, doing that which a celebrated novelist had lately been charged with describing; namely, trying a man in his absence and convicting him. There were many representations remaining of the true hypæthron, for instance, at the ruins of Balbec, where there were elaborate roofs divided into fanciful compartments, and in the centre an opening, with the sky and figures looking through. These he thought were representations of the appearance presented by the actual roof. He did not think it could be successfully contended as an objection to the opening in the roof theory that the aperture would be clumsy, and that the sides of the opening would present a disagreeable appearance, because, in the first instance, the opening might be so constructed that very little room would be left between the top of the beam and the roof; and, secondly, because the Greek architects were too skilful not to have got over any such difficulty. The difficulty with which they had to contend was how to let in light and at the same time keep out the weather. But he believed they were quite ingenious enough to keep their roofs thoroughly water-tight, although he could not suggest the manner in which they accomplished that desideratum.

Mr. Ashpitel observed, that it seemed to him the question was, not which was the best light to show a statue, but simply this, whether the large places of worship used by the Greeks were covered or not, or whether there was an open space in the centre, surrounded by colonnades, a place like the cloister of our own cathedrals, which could be used by the priests in bad weather. Bad weather was, however, a matter of such extremely rare occurrence in Greece, that he thought it might be left out of consideration altogether. Moreover, there was abundant evidence to show that even in Italy, where the climate was not so invariably serene, the statues were exposed in the open air. At Florence, for instance, the statue of Michelangelo stood in the open air for centuries uninjured, and there were many other examples in the various cities of Italy. In considering the subject to which Mr. Fergusson had invited discussion, it might be all very well to come with a preconceived notion; but we had the testimony of Vitruvius, that the middle of the temple was *sub divo*, and *sine tecto*. Now, what is the meaning of the first phrase. Fortunately, we have a direct explanation of this word in Varro ("De Linguâ Latina," v. 66). He is speaking of the God so much reverenced by Latins, the Deus Fidius, and he tells us in his temples, "*ejus perforatum tectum, ut eâ videatur divom, id est, cœlum,*"—his roof was perforated, that by that means the *divom* might be seen,—that is, the sky. But Vitruvius goes further, and says it is also "*sine tecto,*" *without roof.* There can be no other translation of this phrase. To take another example, Ovid tells us (Fasti, ii. 667), that when it was necessary to enlarge the Temple of Jupiter Capitolinus at Rome, which we all know was a covered temple, the statue of the god Terminus stood in the way. It would have been "*nefastum*" to have moved this god, and also to sacrifice to him unless under the open air, and therefore the temple was built over the statue, and a hole left in the roof, that those conditions should be fulfilled. The words are,—

"——Se supra, ne quid nisi sidera cernat,
Exiguum templi tecta foramen habet."

Servius gives the same account, and uses the same words, "*sub divo.*" Now, in the restoration before us, there *is* a roof, and the light is admitted sideways, so that the building cannot be said to be under the sky, nor could the stars be seen *over head,—suprà.* Were these authors right, and did they know what they were talking of? He thought their testimony too strong to be affected by any conjectures, however ingenious they might be. But if that was not enough, he would ask what is the meaning of the word hypæthron? Is it not derived from ὑπο and αιθηρ, "under the sky?" Gentlemen would remember the magnificent soliloquy of Prometheus at the beginning of the noble tragedy of Æschylus, where he apostrophizes "the godlike sky, the swift-winged winds, the laughing ocean, the river-floods, the earth—the mother of us all," and the word used to express the sky is αιθηρ. It almost seemed to him that to say an hypæthral temple was covered with a roof, was to say "out of doors" meant "in-doors," so strong did the testimony seem. But he might go further, and would cite the description of the Temple of Juno at Samos, as given by Strabo. He says,—"Without (χωρις) [probably under the portico], it contained many pictures; in the chapels (ναϊσκοι) are there also pictures; and in the hypæthron (ὑπαιθρον) are many statues." And in another passage, describing the Temple of Jupiter Soter, he says the colonnades (στοϊδια) contain pictures; the hypæthron, statues. But now he would advert to the allusion made by a gentleman to the chryselephantine statues. These, of course, *would* require protection from the weather. We learn from several passages in Pausanias that they were made of wood, and covered with thin plates of ivory where the flesh was intended to be shown, and of gold where there was drapery. Now, it was clear the heat would injure the ivory, and the rain would cause the wood to swell, and the sun to shrink it, and this must clearly injure the statue. It is true that these chryselephantine statues were protected by veils and curtains; but these would not keep off the almost tropical rains which sometimes fall in Greece; and he (Mr. Ashpitel) would call the attention of the chairman to the fact, that their late lamented friend Canina, a name he could never mention without the sincerest regret, nor could the meeting receive such mention without the deepest respect,—Canina, in his restoration of the Parthenon, had believed there was a sort of baldacchino, or tabernacle, over the statue of Minerva for such protection. In his restoration of the Temple of Jupiter at Elis, where there was a chryselephantine statue of the god, in a sitting position, of gigantic proportions, the same author had believed that a sort of shed-roof had been placed across the end of the temple, for the purpose of similar shelter. He must now venture to say a few words in defence of his friend Mr. Falkener, whose book was an earnest assertion of the love the Greeks had for ideal beauty, and their unrivalled excellence in its production. That gentleman had devoted his life and all his energies to the investigation of the subject, with a singleness of purpose and constant persistency, which must command the respect of all, whether lovers of Classic or Mediæval art, or — as he (Mr. Ashpitel) thought they ought to be—of both. Now, in searching for certain facts, Mr. Falkener finds three ancient medals, each representing the deity of some temple placed under an arch. He cannot believe that, however imperfectly a medal can represent large buildings, such a thing as an arch would be depicted, if it never existed; and he therefore proposes a restoration of the Parthenon, combining an hypæthron with an arched ceiling over part thereof, to protect the chryselephantine statue. Now, surely here are new facts to which our attention is invited; and surely, however we may differ with Mr. Falkener—and he (the speaker) did so on a few points,—surely he was entitled to be spoken of with respect for adding other facts to our knowledge of the subject. But, after all, even to our northern ideas, is there anything so very absurd in our notions of a building the middle of which is surrounded by a colonnade, and yet which is open to the air? Is not the Pantheon at Rome an example to the present day of an open roof? He had often seen the rain fall in on the pavement. Were not the cloisters of our cathedrals colonnades open in the centre? And, to come to a more familiar instance, is not a place crowded daily with people, that "place where merchants most do congregate," our Royal Exchange, a positive hypæthral building to the present hour? But it has been said that Vitruvius tells us the hypæthral temples were decastyle; that is, they had ten columns in the pronaos and posticum, and that, therefore, the Parthenon could not be hypæthral, as that building is octastyle, and has only eight columns in front. Now, the author does say so; but he also states there are no such temples at Rome, where he lived and wrote; and then he goes on to say, "Sed Athenis octastylos, in templo Jovis." Now this cannot allude to that of Jupiter alone, as that was decastyle; and the probability is, that the reading of Canina must be accepted, who supposes the word "et" to have been left out; in which case the meaning of Vitruvius would be, that at Athens there is the hypæthral temple to Jupiter Olympius, and another, an octastyle temple, most probably the Parthenon itself. There seemed abundant evidence to disprove Mr. Fergusson's theory. Had there been no other but that of Vitruvius to show these temples were *sub divo* and *sine tecto*, he should have thought the matter settled. But, however they might

differ from Mr. Fergusson as to his theory, the best thanks of the Institute were due to him for the ability with which he had treated of a very difficult subject, and the very able and ingenious conjecture he had thrown out; as well as for the careful and learned manner in which he had supported his opinions. However they might differ with him as to *any* theory, they were sure of an able and interesting paper at all times from Mr. Fergusson. He, therefore, moved that the thanks of the Institute be given to that gentleman for it, and felt sure it would be cordially responded to.

Mr. Cockerell, jun., said it had been urged in favour of Mr. Fergusson's theory that statues which were *sub divo* would be necessarily exposed to injury; but he would ask whether there was any proof that such statues were exposed to the weather? They might have been set further back; and in that case the light would fall upon the pediment, and would be reflected upwards, as in the case of the frieze of the Parthenon.

Mr. Ashpitel said there was no light like the light of heaven.

Mr. Cockerell.—But some of the most beautiful pieces of sculpture never could have had the light of heaven, but only a reflected light, as in the frieze of the Parthenon.

Mr. Bell said that as a sculptor he felt bound to say that the frieze of the Parthenon was sculptured so that the light might be reflected from below. His own impression was that Phideas, being well aware of the light in which the frieze would be showed, had adapted his relievo accordingly (which was different from many others) for that peculiar light. A light reflected from below was, however, the worst light which could be got for a statue in the round, and the best was a light from above, at an angle of 45°. If, on the contrary, the statue were painted, it would look very well in a light coming in from two sides. This, however, would not do for a plain statue. A statue veneered with ivory would, he thought, be curled up or destroyed by the heat of the sun, if adequate protection were not provided for it. Ivory on a core of wood would also be liable to warp by the draught and wind. He was still of opinion that it would be very satisfactory if an experiment could be made with a model.

Mr. T. H. Lewis, in seconding the vote of thanks to Mr. Fergusson, observed that those who knew the heat of the sun in Greece could readily imagine that some protection would be necessary for such statues as that in ivory in the Parthenon. The heat was in fact so intense, that it was impossible for travellers to move about when the sun was at its meridian. On the occasion of his visit to Athens, he had been struck by the whiteness of the marble in its raw state. At Athens, the palace of the king was built of the purest Parian, and the reflection of the sun upon the white surface was almost intolerable to the eye. Any statue, therefore, cut out of marble in the crude state, would require very little light indeed.

Mr. Papworth protested against both theories—that of the hypæthron, and that for which Mr. Fergusson contended. He believed that, in that portion of the temple devoted to the deity, no light whatever was admitted either by clerestory or opening in roof. No one was, he fancied, admitted into the shrine but some very favourite worshipper—Alexander, for instance—and he did not believe that any but the *élite* were suffered to approach it, except the priests. The humble worshippers, or the congregation generally, were in the great square in front; and from thence they dimly saw, looming through the reflected light, the august image they were adoring. In the hypæthral temple, he conceived, there was a kind of cloister light, and that on occasions of great ceremony the high contracting powers were alone allowed to approach the shrine. He disagreed with all that had been said on either side.

The Chairman said he did not wish the discussion to close without saying a very few words. He thought they were all much indebted to Mr. Fergusson for endeavouring to cut the Gordian knot, and find a solution of a very obscure and complicated question. He was sorry, however, that he could not agree with him in the very ingenious theory which he had set up. There were several authorities to refer to, all of which he considered tended in an opposite direction. There were the buildings themselves, the ancient writers, medals, fragments, and pavement. Although there were several medals showing roofs, not one showed any sign of the hypæthron, or even small vertical openings. The ancient writers were, however, the authorities upon whom he was disposed to place most reliance; and he for one confessed that he could not get over the expression of Vitruvius, "*medio sub divo et sine tecto.*" His own impression was that, whereas the climate of Greece would admit invariably of the construction of hypæthral temples, that of Rome would not. He had always been of opinion that the part immediately over the statue was roofed, and even in that case there would be abundant light upon the statue. To corroborate this, there was the expression of Strabo, to the effect that, if the god had risen, he would have knocked his head through the roof,—a circumstance which could not have occurred if there had been no roof. The word "temple," he thought, was intended to refer, not to the shrine only, but to every part of the building which was within the sacred precincts. With regard to the covering of Egyptian temples, he agreed with those who thought that the object was to protect the worshippers from the extreme heat of the sun in that country. If they were to examine the Greek churches of the present day, they would find that they were lighted rather by lamps than by the narrow openings described as windows. He could, therefore, well imagine that the shrines of the ancient Greek temples had no light, except from the doorway or grated aperture above the door itself. He was sorry that Mr. Falkener was not present that evening to hear what had been said of him, and to give them the benefit of his research upon the subject. The Chairman concluded by putting the motion, which was carried *nem. con.*

Mr. Fergusson, in acknowledging the compliment, briefly referred to some of the arguments adduced by previous speakers; and contended that it was impossible for a medal to show the opening in the roof of a temple. It seemed to him that Mr. Ashpitel was mistaken as to what Vitruvius had said, which was, that a hypæthral temple was decastyle and diptheral. He was of opinion that the word "hypæthral" was used with reference to a court-yard, and not to a temple. He hoped, however, that gentlemen would, at their leisure, consider the subject, because he was persuaded that no valid objection had been urged against his theory.

The following gentlemen were, on ballot, elected fellows of the Institute:—Mr. Edward G. Bruton, associate, of Oxford; and Mr. William Jeffrey Hopkins, of Worcester.

THE MOVEMENT FOR THE IMPROVEMENT OF COTTAGES FOR WORKMEN AND AGRICULTURAL LABOURERS.

At agricultural meetings throughout England, and at assemblages of members of Parliament and constituencies in the rural districts, there has for some time past been shown pleasing evidence of the attention which is beginning to be directed to the improvement in the dwellings of field labourers and villagers. From all parts we hear of men of all shades of political opinion expressing a laudable desire for the social and intellectual advancement of the peasantry, and acknowledging that it is by an alteration of the home accommodation that this is mainly to be effected in the first instance.

To those who have examined with care the dwellings of the labouring classes in large towns, and in many agricultural districts of England, this has for years been so evident that it is surprising the vast consequence of this question should have been so generally overlooked so long. But there have been and still are difficulties to encounter. Amongst these may be mentioned the peculiar prejudices of several of those in high positions, and of considerable masses of the poorer classes themselves. The law of parish settlement has also proved a stumbling-block, and been the cause of so much expense to some estates, that it has been considered a matter of policy rather to get rid of the houses of labourers than to erect new ones suitable to their use. Notwithstanding all this, and more, which might be mentioned, it seems clear that it is a duty of the owners of large estates on which labour is extensively employed to provide dwellings suitable for the use of human beings in which morality and decency may be cultivated, and the health of both children and adults rendered comparatively safe. This has, however, been neglected, and the consequence is evident. Pauperism has increased, owing to the sudden death or sickness of parents, or the profligacy of youthful portions of the population, who have been reared in such a way that nothing better could have been expected.

At Darlton, in Scotland, close by the picturesque ruins of the castle of that name, there is a beautiful village which was reared by the proprietors of the surrounding property. Each cottage is of convenient size, built in such a substantial manner, with the stone of the country, that, with proper repairs, they may stand for several centuries. These have been built for some years, and might be better in their internal arrangements. Attached to each is a garden of considerable size. Nearly all these, at the time of our visit, were gay with flowers and stocked with useful vegetables and fruit: some houses were smothered with roses; and it was singular to notice the difference between this and some of the villages in the adjoining district. Bare and bleak they looked, and without attempt being made at planting a greenery; the thatch broken and neglected; refuse lying in heaps in stagnant water; the masonry rough; doors and windows small; the floors often unpaved and below the level of the adjoining surface. The general arrangement of these houses consists of two rooms;—the front, which is mostly used as a sitting-room, and in which cooking and other operations are carried forward, with sometimes a bed in it; and an inner apartment, which is fitted with beds in box-shaped places along the walls. In some parts of Scotland, even at the present day, artists, or others who wish to enjoy the picturesque beauty of the scenery in places called inns, have no choice except accommodation of this kind amongst the members of the family. Notwithstanding the training and good education which are common in the majority of Scottish families, statistics show a large excess of illegitimate births, and other evils, which are doubtless in part to be attributed to the general ill arrangement of the dwellings. Crossing the borders, in the wide domains of the Duke of Northumberland, much improvement has been made; and also in a few of the pit villages. The fault, however, in most cases, is, that only the same provision is made in all instances; so that, while those who have but small families, or none, are not so ill off; those with numerous children have quite unsuitable accommodation. Amongst the colliers, it is a custom for the boys to remain at home until they marry; and it is necessary that there should be at least three separate rooms in each cottage intended for the use of families. From much experience of the requirements of this class of workers, and those connected with the different departments of lead and iron mining, we would urge that baths—which might be conveniently situate—would be most valuable, and serve to some extent to preserve the decency of the homes: these need not be costly; for generally both warm and cold water are close at hand. It would also be worth while to consider if arrangements of this kind could not be made in some appurtenance of the cottages. Those who are acquainted with the present management will appreciate the value of this suggestion.

Along Tyne-side, and in the county of Durham, for the most part, the cottages occupied by country mechanics, and persons who have families, contain rooms of considerable size; are substantially built with freestone; and are covered either with blue slates or flag-stone. Some are two stories high, and are mostly occupied by three or four families. The house in which George Stephenson, the engineer, was born, near Wylam, is of this description. A staircase runs up from the door, which is in the centre, with two rooms on each side. Four, if not more, families live there.

In the direction of Cumberland, and in that county itself, the cottage accommodation is, on the whole, worse. In a wild district, an informant mentions that he was driven by stormy weather to seek shelter in a road-side house: in such state of repair was the thatched roof, that it was necessary to employ umbrellas and other means for the purpose of endeavouring to prevent the water from running on the beds. It is not wonderful, therefore, that the aged mistress of this "habitation" should often offer up a prayer for "the Lord to send fair weather to sleep in." Throughout those districts it is not usual to attempt the decoration of the exterior of the cottages by means of flowers; and the same may be said respecting a large part of Yorkshire; although there are exceptions in other divisions.

In several of the southern counties of England, take Hertfordshire for instance, the cottages are most inconveniently small: the doorways are often not more than from 4 feet 10 inches to 5 feet in height, and the apartments are not larger than the cabins of the old-fashioned second-rate Tyne coal-ships, which may be still seen in the Thames. The cock-lofts of these houses, reached by temporary ladders, in which children sleep, are still smaller. In some instances, taking the whole cubic space of one of these cottages, it is far less than that in the caravans of the wandering

showmen. The number of persons who sometimes occupy these ill-contrived dwelling-places is extraordinary. No wonder, then,—even if we leave out of account the bad drainage, the polluted water, and other imperfect sanitary conditions,—that life is short and health bad, in even pleasant and otherwise wholesome neighbourhoods. We cannot just now enter into details; but it is an indisputable fact that quite as evil conditions may be found in rural districts, in a different external shape, as are to be met with in the back regions of Drury-lane or Gray's Inn-lane.

Throughout the length and breadth of the land, in the mining villages, along the margin of the coast, in the vicinity of great works, and in the agricultural districts of England and Scotland, there is need of great change. It is therefore most gratifying to find that a good spirit is abroad; but, in order to effect a sure amount of benefit, it is necessary that those who have the power of providing a remedy should, with their own eyes, intelligently and kindly examine, in their own localities, the state of the homes of their dependants, and compare them with what they ought to be. There is good time for this between now and Christmas.

At a recent meeting in Staffordshire, including many large employers of labour, amongst other matters, the improvement of the homes of the men was ably advocated, and especial attention was given to the serious evil of the drinking habits of numbers of the industrious classes; and good seems to have been done, as in the abandonment of the plan of paying wages at public-houses, and the abolishing of the intolerable "Butty" system. All these efforts are most praiseworthy; and, while acknowledging the terrible extent and mischief of drunkenness, we have a firm opinion that this and other vices would be much modified by providing suitable homes for the industrious part of the community.

In connection with this subject we may add that the Association for Promoting Improvement in the Dwellings and Domestic Condition of Agricultural Labourers in Scotland have published their seventh report,* which contains, as usual, plans and information, at a nominal price.

VILLAGE HOSPITALS.

CRANLEY.

SURGICAL experience has sufficiently proved that many operations can be performed in a small country hospital, which could not with safety have been attempted in the foul air of a crowded London hospital. And, moreover, many surgical cases occur in villages and hamlets which have no chance of being sent to metropolitan or other large town hospitals, even though they could be better or more successfully treated there than nearer home. Village hospitals, therefore, are a great desideratum; and, indeed, it would be well in many cases were patients sent to such hospitals even from those in town,—at least, where experience had proved that good surgeons were to be found; and that there are many good surgeons and physicians in villages, we do not doubt, notwithstanding what has been recently urged to the contrary. Besides, even where the surgical aid was not equal, better air and less crowding would more than compensate in many cases for other shortcomings or defects. There is one rather serious hinderance, however, to the extension of village hospitals; and that is the strong professional jealousy so prevalent in small places. Could country surgeons be made to see how much to their mutual advantage it would be to combine, in order to show that as hospital surgeons they are not inferior to their city brethren, much good might be done, and town patients, we do believe, would often be sent to country hospitals for more safe if not more skilful treatment.

These reflections have been suggested by a report, now before us, on "The Cranley Village Hospital," established in 1859, and under the professional superintendence of Mr. A. Napper. This small hospital contains only half a dozen beds, and is attended by two nurses. The number of cases treated in it last year was twenty-three, and as many in the year previous. Many of these cases were of a character that could not have been properly treated in ordinary cottages, and the distance of the London hospitals, as well as the unfavourable influence of change of atmosphere, and the poverty of the patients, rendered removal to London entirely out of the question. Much suffering, it appears, has been alleviated, and not a few lives saved already by the Cranley Village Hospital. It has our best wishes for its continued success; and we trust it may be the precursor of village hospitals in many parts of the country.

* Office, 53, North Frederick-street, Edinburgh.

THE ARTS OF CONSTRUCTION, KING'S COLLEGE, LONDON.

WE are glad to hear that the council have appointed Mr. Robert Kerr Professor of the Arts of Construction at King's College, vacant by the death of the late Professor Hosking. The selection, we are told, was moreover made in so flattering a manner as to render the honour doubly gratifying. We cordially congratulate Professor Kerr on his appointment, and anticipate from it great advantage to the movement in favour of extended professional education.

SOCIETY OF ARTS.

THE first ordinary meeting of the hundred and eighth session was held on Wednesday last. Sir Thomas Phillips, F.G.S., chairman of the council, presided, and delivered an address, in the course of which he said that as the International Exhibition buildings were susceptible of much decoration, it was thought desirable to originate a subscription for the purpose of making experiments in the employment of mosaics on the external walls of the front in Cromwell-road. The subscription was begun by Earl Granville; and, should the mosaics be successful, they would give to the buildings a character new in this country, especially suitable to the climate, and hardly to be found on any buildings north of the Alps.

At the close of his address, the chairman presented the medals awarded by the council at the close of the session to the following gentlemen:—

To Dr. Edward Smith, F.R.S., for his two papers, "Recent Experimental Inquiries into the Nature and Action of Alcohols as Food," and "On the Uses of Tea in the Healthy System." The Society's silver medal.

To A. K. Isbister, for his paper "On the 'Hudson's Bay Territories; their Trade, Productions, and Resources; with Suggestions for the Establishment and Economical Administration of a Crown Colony on the Red River and Saskatchewan." The Society's silver medal.

To Alexander Redgrave, for his paper "On the Progress of the Textile Manufactures of Great Britain." The Society's silver medal.

To Dr. Milligan, for his paper "On Tasmania; its Character, Products, and Resources." The Society's silver medal.

To Charles Ledger, for "The Introduction of the Alpaca into the Australian Colonies." The Society's silver medal.

To. F. Joubert, for "The Application of Photography to the production of Images on Glass, which can be burnt in." The Society's silver medal.

GLASGOW ARCHITECTURAL ASSOCIATION.

THE gold and silver medals presented to the Association by Mr. James Smith, for competition among the members, for the best and second best designs for a villa, have been awarded; the gold medal to Mr. Robert Goodwin, Elmbank-place, draughtsman, in Messrs. A. & G. Thomson's office; and the silver medal to Mr. J. Moir Smith, Hope-street, draughtsman, in the office of Mr. James Smith. The medals are the work of Mr. D. C. Rait, Buchanan-street.

LIVERPOOL ARCHITECTURAL SOCIETY.

AT the fourth meeting of this Society for the present season, Mr. Stubbs, vice-president, occupying the chair, Mr. Horner alluded in feeling terms to the loss which the Society had experienced in the death of their valued member, Mr. John Hay, a gentleman whose energy and clear judgment had been of much service to the Society. He proposed that a letter of condolence be sent to Mrs. Hay, expressive of the sympathy they felt for her under the sad bereavement she had experienced. The proposition of Mr. Horner was agreed to unanimously. It was understood to have been a suggestion from the late Mr. Hay, at a banquet given by Mr. William Jackson on the completion of his Manor House, at Claughton, which led to the formation of the Architectural Society. There was no paper read on this evening, the business being confined to miscellaneous communications. Some specimens of stone were exhibited from Berwig Quarry, Minera, near Wrexham: a description was also read showing the quantity and quality of the stone and the uses to which it was being applied. Mr. William Wood's patent girder for extinguishing fires was shown and explained. Mr. Grant exhibited and explained his patent hoisting apparatus. Some general conversation followed on various topics, after which the meeting separated.

CHANNEL RAILWAYS.

SCHEMES for crossing the Channel by railway are multiplying. We have this week two more to add to the number of those already recorded in the *Builder*. The one is that of Mr. James F. Smith, architect and engineer, Leicester. Mr. Smith proposes that the railway be carried through a wrought-iron tube, at a level about six fathoms below the surface of the sea. It is computed that the space of water displaced by the tube, supposing its length 23 miles, would be about 2,347,840 cubic yards, or 1,821,600 tons weight; consequently, deducting the weight of the tube and ballast, about 800,000 tons, there remains 1,021,600 tons required to make the tube of the specific gravity of sea-water, or upwards of 25 tons per lineal yard for the entire length of the tube; and it is proposed to distribute this weight along the bottom of the sea, to which chains are to be attached, and secured to the tube by adjusting rods, so that it may be kept level its entire length; and further, in cases where practicable, and the rock hard enough, "Lewises" may be made in the rocky bed of the sea, and so connect the tube with the immoveable bottom. Besides these chain weights, every 50 feet apart, diagonal strain and tie chains are to be employed to connect the tube to weights, or by "Lewises," as the case may be, to prevent any disturbance of the tube by tidal waves, or under current, "if any." Mr. Smith speaks of "the gentle action of tidal waves or under current;" but can the rush of the tidal wave through the British Channel be safely considered as a "gentle action?" At the depth indicated, he considers that "the tube may be supposed to lie in quiescent water. But further [he adds], and for the removal of all doubts, it is proposed to build on each side the tube, every mile apart, immense piers of masonry connected together with wrought-iron rods above and below the tube."

It is proposed to carry out the works simultaneously on either shore; the tube to be built in lengths of 100 feet; and, after proved, to be floated to their position, made of the specific gravity of water by weights, and the water prevented from entering the ends by removeable iron plates.

There are two cases or shells, inclosing the "roadway;" the inner one consisting of wrought-iron plates, 1 inch thick, riveted to T and angle iron, and the outer one of two like plates, or 2 inches in thickness, of wrought metal, enveloping the whole; so, that in case a train got off the line of rails and tore away the inside shell, the tube would still be sound, and comparatively uninjured.

It is proposed to descend from the level of the country, at each end to the tube, by a corkscrew tunnel, with an easy gradient. Ventilation would be accomplished either by currents of air, or by floating ventilators. The cost, Mr. Smith calculates, would probably not exceed ten millions and a half sterling.

The next scheme is one proposed by Mr. Robert Climie, of Glasgow, engineer. This undertaking, remarks our correspondent, would embrace two large towers or mounds, solidly founded, and built of stone and lime, bolted with iron, having strong iron posts or pillars, carried up through the buildings.

The towers would be erected at proper distances from each shore, so as the *Great Eastern* steamer or other large vessel could come alongside, and railway carriages run on and off to lines of rails placed on the deck. The spaces between the shores and the towers would either be filled up by embankments, or partly by bridging and banking. On the tops of the embankments and bridges, lines of rails would be laid, corresponding to the other lines laid on the vessels; and the rails on the towers would be raised by mechanical means, according to the states of the tide, to the level of the rails placed on the deck; by which passengers could cross and recross the Channel without requiring to leave the carriages.

Both shores and portions of the towers would be occupied as warehouses, workshops, &c., which would become railway cities. The shore embankments would form harbours of refuge, and the steamers could be fitted up as floating hotels.

Our correspondent reminds us that a railway somewhat similar to the one here proposed is in operation on the Forth and Tay ferries. This scheme, of course, would still be of the nature of a ferry; but the object sought to be realized by it is the crossing and recrossing of railway carriages in trains, as they reach the ferry by rail.

THE METROPOLITAN ASSOCIATION OF MEDICAL OFFICERS OF HEALTH.

HEATING AND VENTILATING.

At the last meeting of the Metropolitan Association of Medical Officers of Health, at Richmond-terrace, Whitehall, on Saturday, the 18th instant, Mr. W. Weatherby Phipson, C.E., read a paper entitled "Notice on Dr. Van Hecke's System of Warming and Ventilation."

The author, comparing the Van Hecke system, which has been described in our pages, with those already employed, arrives at the conclusion, already formulated by Dr. Pettankŏfer, of Berlin, and Drs. Maximillien Vernois and Grassi, of Paris, that Dr. Van Hecke's system of warming and ventilation is the only one which realises efficient ventilation and uniform warming, with economy in outlay and in maintenance.

"The system Van Hecke," says Dr. Pettankŏfer, in his recently-published remarks on warming and ventilation, "has completely upset all our ventilation traditions."

Mr. Phipson shows that this result has been attained by the application of scientific principles and mathematical calculations, by means of which the supply of air and the heat are completely under control. The author explained the whole detail of the system, illustrating it by plans of the Chambers of Representatives of the Hague (Holland), the Hospital Necker of Paris, the Asile Impériale du Vesinet, and several other buildings warmed and ventilated upon the Van Hecke principle; bringing forward, at the same time, abstracts of reports from the French, Dutch, and Bavarian Governments relative to the system in question. The latter is extremely simple. The fresh air is propelled along an air channel by means of a fan, patented by Dr. Van Hecke, into an air chamber containing a warming apparatus, where it is warmed and moistened, and whence it is distributed over the building. An anemometer and dynamometer placed before the fan indicate at any moment the exact amount of air supplied to the building. The amount in hospitals is 2,200 cubic feet (minimum) per hour per bed, but it is capable of being doubled. This quantity of air is supplied without any perceptible draught, and the thermometers in the wards indicate a constant temperature of 60° Fahrenheit. In summer the air is cooled as it is warmed in winter. The vitiated air escapes through flues, each having free access to the external air.

The author, in his description of the warming apparatus, shows that it utilises the heat of the waste smoke. The warm baths and vapour baths are also supplied by the waste steam of the small engine which works the fan.

To economise heat in winter, the vitiated air escapes from that part of the room at which the temperature is always lowest. The heating chambers vary in number according to the requirements of the building. Inclosed in each is the warming apparatus, consisting of a cast iron cockle, from the summit of which depart a series of sheet iron smoke-flues, which, circulating four times round the cockle, in shape of a square, conduct the smoke to a chimney in the wall. To this is added a vessel for moistening the air.

An animated and interesting discussion ensued, in which Mr. Chadwick, Dr. Sanderson, Dr. Thomson, Dr. Greenhow, &c., &c., took part.

Mr. Phipson was congratulated upon having called the attention of the members to the system. After a discourse by Dr. Sanderson, and an address from the president, the thanks of the evening were voted to Mr. Phipson for his paper.

THE SEWAGE FOR THE SOIL.

For some years we have occasionally pointed attention to the deodorizing power of earth and clay as a hopeful element in the solving of the great sewage problem; and, in a like spirit, have done justice even to the much-abused mud of rivers, such as the Thames itself. Within the last two or three years a "dry closet" has been patented, an account of which, as we saw it at Glasgow, we have also given. It now appears that, apart from other sanitary reformers, the Rev. Henry Moule, M.A., vicar of Fordington, Dorset, has accidentally rediscovered the deodorizing power of earth (of which, however, every gamekeeper who rubs his hands with earth, after defiling them with rotting game, must be aware, as are also farmers and gardeners who use night soil as manure); and the same rev. gentleman has also invented and patented a "dry closet," in which earth is mixed with night soil, which it completely deodorizes, even though the same earth be used five or six times over, after being dried at each time; thus yielding, as he finds, a most potent manure.

One method by means of which he dries such earth, and also uses up greasy slops, &c., is curious. He has invented and patented a "vapour-fed stove and grate," on the principle, now well known, that water applied to red-hot carbon (as in forming the illuminative gas at Narbonne, for example) is decomposed, and, in fact, feeds the fire, so as to constitute, as he finds, a considerable saving of fuel. The compost of which we have spoken may, he says, be dried in such stoves, without giving forth the least offensive smell, and without the virtues of the manure being at all affected.

Mr. Moule has written and published several pamphlets,* with the view of urging his discoveries on the public notice; and he maintains the perfect possibility, as well as advantages, of applying these discoveries to the solution of the sewage problem in towns, and even in the metropolis.

In a communication to us, the Rev. Mr. Moule thus urges his views:—

"Referring to Dr. McCormac's statement (*Builder*, p. 761), that the soil is a sure and safe deodorizer, &c., and to your own hope, expressed p. 715, 'that the right mode of efficiently and profitably returning the sewage to the earth will presently be made clear,' I beg leave to state, for the benefit of your readers, that, in the system developed in the two pamphlets which I send by this same post, the soil is so used, and the sewage returned to the earth, not only with profit and efficiency, but by a mode easy, simple, and inoffensive.

The public are slow to believe in the truth of the principle and in the efficiency of the system; but both are being daily verified by experience. Take the following instances:—

For three years I have had no cesspool on my premises: all offensive matter has been removed daily.

A clergyman and his wife have for nearly a twelvemonth used one of the patent earth closets. It has been placed in a room 6 feet square, and within 10 feet of the parlour door; yet never has there been any offence perceived.

Again, an engineer officer who, under orders from the War-office, has tried these patent closets, showed me two months ago the complete success of his application of the system. The contents of a box which had been used for two days by sixteen men were emptied on the floor of a shed, and nothing offensive even then was to be seen or smelt. The mass was then passed through a pug-mill, which had been erected for the purpose, and in less than ten minutes it came out a mass of inoffensive earth.

The vice-chairman of the Board of Guardians at Bradford-on-Avon tells me that my system (Manure for the Million) is in full operation in the union workhouse school, and with complete success. Where all was noxious pungency before, all is now sweet and wholesome.

Lastly, a gardener in Weymouth is so satisfied with the system, and with the valuable manure which is thus manufactured, that he offers to any who will adopt the plan that he will supply and remove the earth necessary for the purpose free of all charge.

May I call your attention to the statistics in 'National Health and Wealth,' and beg you to press them upon your readers?"

In reference to the last paragraph, we have only to remark that the value of night soil is far too well known to every attentive reader of the *Builder* to require much further elucidation.

THE POST OFFICE.

HINT FOR THE SAFE REMITTANCE OF MONEY FROM ABROAD BY WORKMEN.

The extensive misappropriation of letters is becoming a very serious consideration. Bankers' and merchants' letters, and post-office parcels, which contained bills and other valuable securities, have been stolen by wholesale. One batch of these important despatches was not long since delayed for several hours, a matter of vast consequence when we consider that much difficulty in business is certain to be caused by these derangements, and that even the credit of firms and individuals may be severely damaged. In spite of a diligent system of detective, espial, and other means of prevention, letters containing money, &c., both notes and specie, are often pilfered. Numerous cases are brought before the notice of the police magistrates; but, doubtless, far more never meet the public notice. The authorities of the Post-office are constantly warning persons of the risk of sending coin, jewelry, &c., in letters; very properly mentioning the great temptation which this is to letter sorters and carriers (even to others). The system of post-office orders is cheap and convenient; but the safety of this is much lessened by persons putting in the same letter the money-order and the advice. The money-order and the advice of the name of the sender should, if possible, never be sent by the same postal delivery.

Large sums of money, in amounts of 7*l.*, 8*l.*, 10*l.*, 15*l.*, and upwards, are sent from workmen and others engaged in the railways and other works in India, to wives and friends at home. This is often forwarded by the ordinary post, in letters enclosing bank-notes, &c. The risk of this is obvious. In Australia and other colonies the same plan is also much used. Notwithstanding, this or any sum, large or small, may, with almost certain safety, be sent through the bankers; and it may be useful to mention the method of this to one section of our readers; for it is not generally known to those to whom it would be of advantage that money, for a small payment, can be forwarded by colonial and foreign bankers, who give the name of their London or other banking agent. Advice is then sent to the person who is to receive the remittance of the name of the banker who is appointed to pay it. On this letter being presented at the bank, together with the address, signature, or mark, of the person who has received it, a letter is sent by post to the person who should receive the money; who, on calling at the bank, presenting it, and making the right signature or mark, will at once receive payment. This may at a first glance seem to be a rather roundabout method. It is, however, not so much so in practice, and almost gives assurance that the money will get into the right hands. A method similar to this is extensively in use, but is not sufficiently known to those to whom the safe arrival of an expected remittance from a distant land may be a matter of the most vital importance.

In connection with the arrangements at home for the safe conveyance through the post-office of the representative value of so many millions sterling weekly, it is clear that our present arrangements are insufficient for the sure delivery of valuable letters. The system of registering letters is expensive, and not certain: besides, registered letters have been lost as well as others. Suppose that the carriage of coin through the post-office should be declared illegal, and put out of use? The honesty of those who are engaged in receiving, sorting, and delivering the letters must be a chief means of preserving the reputation and usefulness of our post-office system. In order to ensure this, the men should be adequately paid, and there should be inducements for right attention and good conduct offered by the payment of sufficient wages, a gradual increase, and a fair hope of promotion for long and faithful services. In the mean time, those who have money, &c., to forward by post, should give no reason for complaint by putting temptations in the way. The great majority of the men engaged in the post-office are a hard-worked, civil, and respectable body. They deserve our consideration, and feel disgraced by the acts which have been committed by unworthy members.

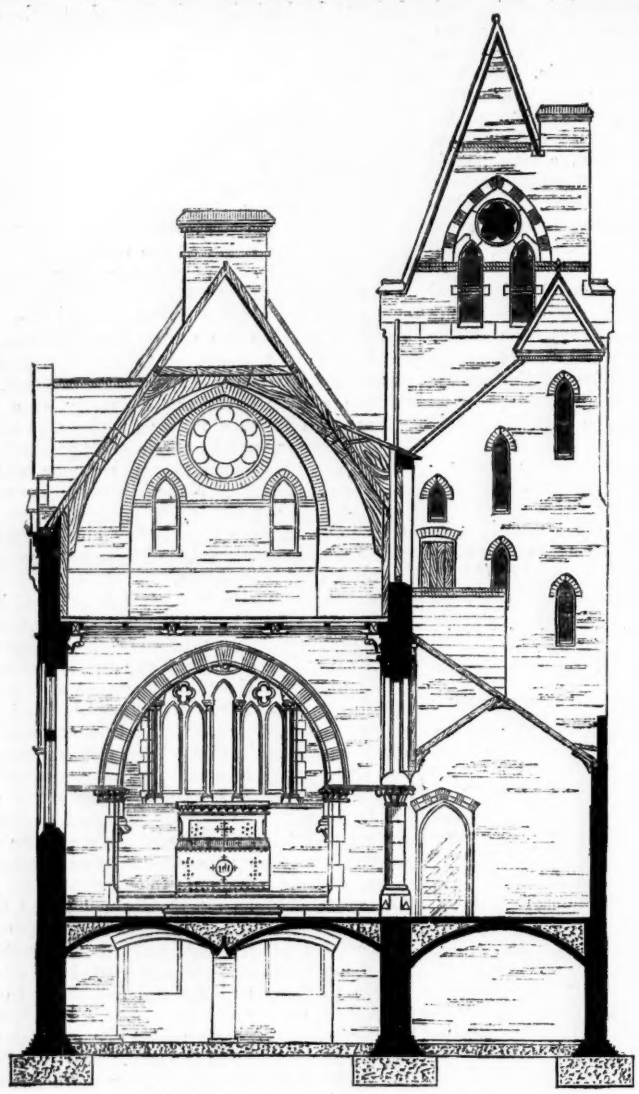
For a long time the great body of the letter-carriers have made complaint that the wages are insufficient, and that the system of promotion is not rightly made. There are other grievances. Many letter-carriers are paid not more than 18s. a week. What is this sum, even in the most moderate way, to enable a man to pay for lodgings and other necessaries in London? But supernumerary postmen have wages as low as 10s. a week. In the suburban districts, persons busy with other employments at one time of the day are delivering letters at another. We have seen a man some hours travelling with such articles as ox-tails, and at others delivering letters. We do not make any general charge against the supernumerary postmen; but, in such an important matter as the delivery of letters, we should have a certainty of both the fitness and distinct responsibility of those employed.

We have had an opportunity, from personal observation, of witnessing the vast operations which are carried forward in St. Martin's-le-Grand alone; and being aware of the wonderful and extensive machinery by which this great public institution is carried forward, and of the large army in the metropolis and throughout not only the British islands, but also parts abroad, who are required. In such an extensive establishment it must be expected that there will occasionally be delinquents; but the number of these lately has been so great as to show that there must be something really wrong, and which calls loudly for remedy.

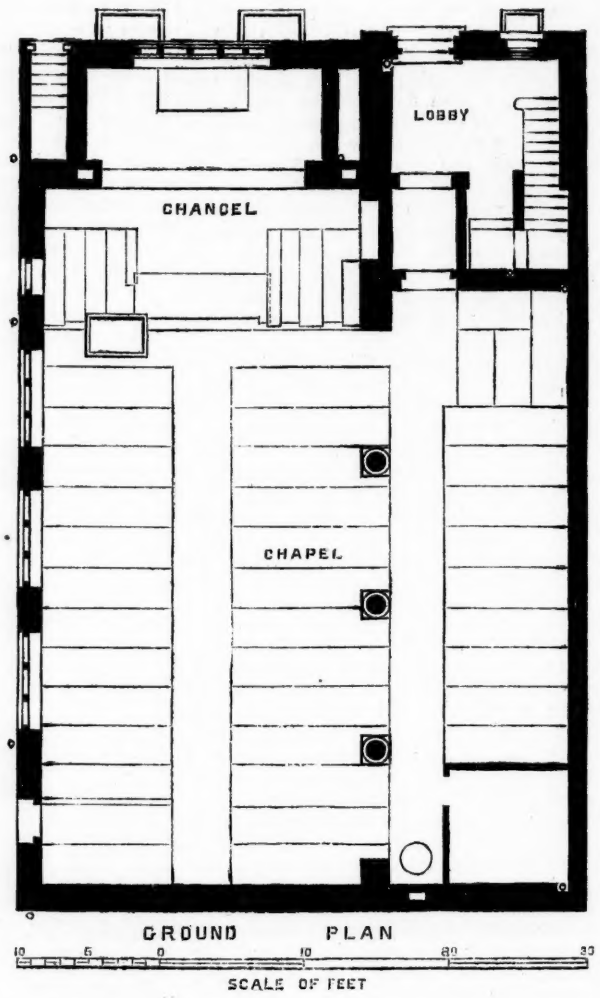
The doubtful advantage of the use of supernumerary assistance should be considered: wages of the permanent men should be made sufficient, and encouragement given to those thus employed to take an interest in it, so that they may not be willing, for a temporary gain, to run the risk of losing character and a comfortable situation.

At the present time the revenue paid to the Government from the post-office is enormous, and is constantly increasing. The matter of revenue should not be so much considered as public utility. A commission, some time since, was engaged in inquiring into the condition of the postmen. In this instance, we fear that the interest of those

* National Health and Wealth; instead of the Disease, Nuisance, Expense, and Waste, caused by Cesspools and Water Drainage. London: Bradbury & Evans.—Manure for the Million: an Address to the Cottage Gardeners of England. Self-supporting Boarding-schools for the Industrious Classes, and Garden Culture. *Dorset Chronicle* Office, Dorchester.



SECTION LOOKING EAST



THE BEDFORDBURY MISSION HOUSE.

employed was not fairly represented: at any rate, not much satisfaction seems to have been the consequence. Great dissatisfaction still exists amongst several of the oldest and most respectable of the men, and loud complaints are made against the present uncertain chance of promotion; and the consideration of the present insecurity shows that it will be necessary, unless something effectual be done, that the next Parliament should take the subject in hand, and an inquiry be made by persons who would consider the matter from a general point of view.

CHAPEL AND SCHOOL IN BEDFORDBURY, COVENT GARDEN.

BEDFORDBURY is a narrow street running out of New-street, Covent Garden, to Chandos-street, and was built about 1637. On the west side of this, a compound edifice, part chapel, part school, has been erected; and on Thursday, the 14th, was opened (not consecrated) with an afternoon service, the Bishop of London preaching. It is in some respects an experiment, and we hope it will turn out a successful one.*

The site of the building (about 60 feet by 40 feet) abutting on one side on the adjoining houses, and closely surrounded by buildings on all the others, offered considerable difficulties to be dealt with in the plan and arrangements. The architect was desired to erect both a chapel and a school on the same site: the limited area, therefore, made it necessary to place one over the other. It appeared absolutely essential that the school, which would be crowded for some hours every day, should have plenty of light and ventilation; and, if possible, a free current of air all round. It was considered, too, that while it would be of great importance that a chapel in such a situation should be on the ground-floor, and that the entrance should offer the most easy and inviting access to the interior, the fact of the children having to mount a flight of steps to the schoolroom, being nothing new, would not be likely to interfere with the usefulness of the school. These considerations led to the arrangement which has been adopted, and which at first sight certainly seems objectionable; viz.,—placing the school-room over the chapel. It was the choice of two evils, and this appeared the lesser.

The building is entered from Bedfordbury, through a small gabled tower which stands at the south-east angle. The doorway has an arched head, the tympanum being filled with sculpture representing "The Good Shepherd." The chapel consists of a nave and south aisle, a small chancel raised two steps, and a sacrarium one step higher. The material employed, inside and out, is brick, relieved with bands of red. The nave is divided from the aisle by a brick arcade, carried on Bath stone columns with carved capitals. The arch to the sacrarium, which is necessarily of low proportion on account of the flat ceiling of the chapel, is carried on small columns of slate with carved capitals and corbels. The sacrarium is plastered to a height of 6 feet, and decorated in a somewhat novel manner in *sgrafito*. There is a credence table and a reredos, in stone, alabaster, and marble, by Mr. Earp, who executed all the carving. The east window, of five lights, is filled with stained glass, by Heaton & Butler. The other windows have square mullions and plate tracery, and are filled with rough plate-glass (not in quarries). Light is admitted, too, by dormers in the south aisle. The ceiling is boarded, and separated into compartments by the girders, which carry the floor of the school-room, and is further subdivided into panels by chamfered ribs. The chapel is warmed by one of Gurney's Gill stoves, placed in a heating chamber in the basement, the warm air entering through the risers of the chancel steps. A second door leads out of the chapel, at the north-west angle, into Hop-gardens. The tower before mentioned contains, besides the stairs to the school-room, two small living-rooms, and lavatories, &c., for the boys, in the basement, and for the girls in the upper story.

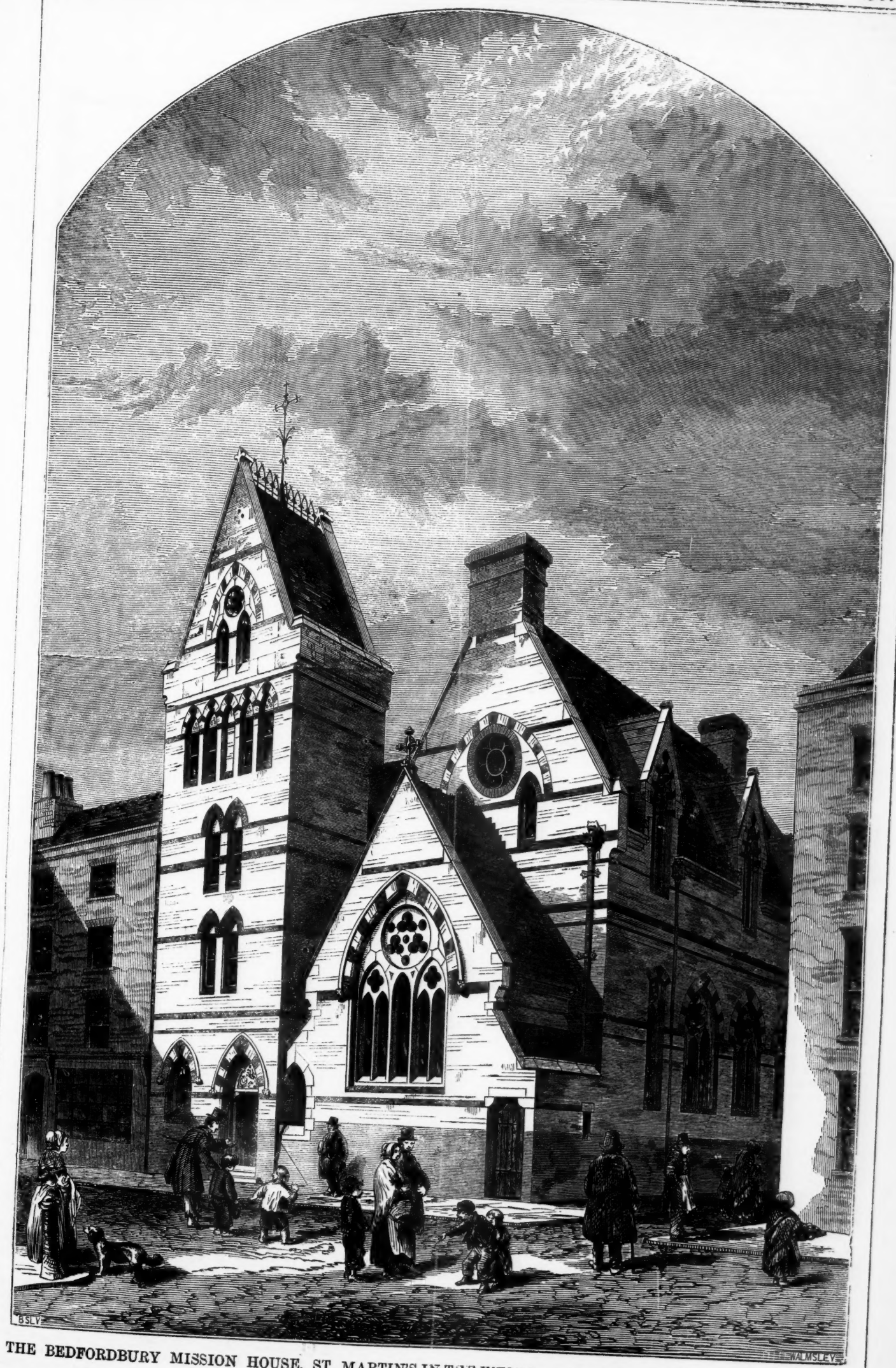
The school-room stands over the nave and chancel of the chapel, thus leaving the south aisle and the sacrarium free with nothing over them. By this arrangement a free space of air is given all round the school, and a convenient light and well-ventilated room is obtained, 50 feet by 22 feet, and 17 feet high to the ceiling, at the collar level. The curved braces of the trusses of the roof are shown as well as the purlins, and the roof is ceiled between. All the woodwork in the school is painted dark chocolate and Indian red. The whole of the glass for the building, with the exception of the east window, was given by Mr. Palmer.

A harmonium has been presented to the chapel by Lady Overstone.

Amongst the principal subscribers are—The Queen and Prince Albert, 250*l.*; Chancellor of the Exchequer, 50*l.*; Lord Overstone, 100*l.*; Mr. H. and Lady Mary Hoare, 220*l.*; Messrs. Coutts, 300*l.*; the Rev. H. Swabey, 300*l.*; Incorporated Church Building Society, 100*l.*; Diocesan ditto, 250*l.*; Messrs. Drummond, 200*l.*; Messrs. Combe, Delafield, & Co., 200*l.*; Messrs. Ransom & Bouverie, 100*l.*; Messrs. Cox & Co., 100*l.*; Rev. W. G. Humphry, vicar of St. Martin's, 100*l.*; the Bishop of London, 20*l.*

The whole building, exclusive of the site, has cost 2,300*l.*, and was erected from the designs and under the superintendence of Mr. A. W. Blomfield, architect. The chapel accommodates 240 persons. The builders were Messrs. Child, Son, & Martin. No district is assigned to the chapel: it will be served from the parish church,—St. Martin's-in-the-Fields.

* On the evening of the 13th, by the desire of some of the committee, a supper was given to twenty of the men who had been employed on the work. Mr. Henry Hoare, the Rev. H. Swabey, Mr. Marshall (churchwarden), Mr. Palmer and Mr. Latchford (members of the committee), and the architect, sat down with them, at eight o'clock, to a capital supper. With various toasts, and some good songs, the evening passed off very pleasantly, and both employers and employed parted mutually pleased with the entertainment.



THE BEDFORDBURY MISSION HOUSE, ST. MARTIN'S-IN-THE FIELDS.——Mr. Arthur W. Blomfield, Architect.

THE GREAT NORTHERN CEMETERY, COLNEY HATCH.

The works of this cemetery, the property of a company, are approaching completion. They have a station of their own on the Great Northern Railway, in York-road, King's-cross, where is a reception-room, where the bodies of persons belonging to families in straitened circumstances may be deposited until the appointed day of sepulture. By this accommodation, the dead may be at once removed from among the living. The time occupied in the transit from the York-road station to Colney Hatch is about fifteen minutes. At the latter station a siding of nearly a mile in length is made to the private cemetery station of the company, but parallel with the main line. There are two Dissenters' chapels, one forming a portion of the station buildings, and the other adjoining, but detached. The plan of this latter chapel is a cross. The Episcopal chapel is in the Early English style. It is built of stone. The tower and its broach spire rise to a height of 150 feet from the ground to the summit of the iron finial. The body of the chapel is about 90 feet long by 25 feet wide, and it is sufficiently commodious to seat about 120 persons. It has been thought that at some future time this building may be used for the solemnization of the ordinary church-service for the convenience of this growing neighbourhood. The buildings and grounds were designed and superintended by Mr. E. A. Spurr, architect to the company; and the drainage was arranged by Mr. H. P. Hakewill, the manager. The whole area of the land is about 160 acres.

FALL OF A FLOOR, ISLE OF DOGS.

Four persons have lost their lives by the falling of a floor at the premises of Messrs. Nicholay, Graham, and Armstrong, proprietors of the Cumberland oil-mills, Isle of Dogs, opposite Greenwich Hospital. At the inquest, Charles Dowdey said that he was a pressman. He saw the floor give way, and heard a double crash. The floor struck the iron girders, and the whole fell with the seed, which almost covered him. He, with difficulty, squeezed himself out of the seed, which was then up to his waist.—By the Deputy Coroner. I cannot say how many tons of seed were in the warehouse. I have seen the warehouse full of seed up to the ceiling, but I believe there had been a great deal more in the place formerly. John Raby, the foreman to the firm, said there were, at the time of the accident, about 148 tons of linseed upon the premises, which had been built about five years. I cannot account for the accident: they had had more weight upon the floor than there was when the accident occurred. The building was erected by contract, and the length was 50 feet by 40 feet.

At an adjourned meeting,

Mr. J. H. Good, district surveyor, said he had inspected the premises, but only to see they were erected according to the Act: he had no control over the amount of weight such buildings were to contain. He was satisfied with the foundations and other internal parts of the building as being completed fully in accordance with the Building Act.

Mr. J. Edmondson, a surveyor, had inspected the premises on Saturday last, and found they were erected in a very sound and substantial manner. He thought the corbels might have been affected by the temperature, and so become brittle; but though they had only to support three tons, they had been found to sustain five tons by the Messrs. Cubitt.

Mr. Rogers, one of the firm of Messrs. Cubitt & Co., said that the specification for the building was 5,837*l*. His first inquiry was as to what the building was to bear. Mr. Graham informed him that the building was to be used for an oil-mill, and gave him general information as to the space to be occupied by the building, the number of stories required, and the weight the floors had to bear. He was informed that each floor would have to support two sacks of linseed in height over the whole surface of the floor. He calculated the weight which would be on each floor, and provided, as he considered, sufficient strength, allowing a margin to the extent of half as much more as the floors would have to carry. Witness prepared the drawings, and there was no architect employed on this occasion. The cost would be about 300*l*. if one had been engaged, but architects were not always engaged.

By the Deputy Coroner.—The dispensation of the services of the architect was not to save expense. The adoption of the corbels was preferable to the use of pillars, and also the old system of constructing such places. Could not account for the accident. The cause was not clear, but it might be ascribed to several reasons. The building was erected in a substantial manner, and the corbels were able to carry three times the weight the firm was directed to provide for.

The inquiry was, at this stage of the proceedings, again adjourned until Wednesday morning next.

FALL OF A BRIDGE ON THE GREAT NORTHERN RAILWAY.

The fall of a bridge on the Great Northern Railway, but for providential circumstances and the vigilance of the engine-driver, must have resulted in the most disastrous results to more than one passenger train upon the line. It appears that, on Thursday night, the Edinburgh express train left the King's-cross Station at 9·15 p.m., for the north; and, at its usual rapid pace, running through without stopping till past Huntingdon. A little beyond it had to pass over a brick bridge on what is called the Wood Watram Bank, that carries the main line over a stream that intersects it between Holme and Huntingdon, at which point the engine-driver, one of the most experienced men upon the road, providentially noticed, as the train swept over the bridge, an unusual oscillation of the locomotive and a sinking of the permanent way, of which, on arriving at Peterborough, hard by, he instantly gave notice. The station-master and staff immediately repaired to the spot, and found that, owing to the recent heavy rains and floods that had occurred in the district, the abutments of the bridge had sunk from the level of the line, and that a considerable portion of the road had also got loose and out of level. The next up train to town from the north was stopped on the other side of the bridge: the passengers got out and walked round: the empty train was drawn over the bridge, which was sufficiently strong to sustain it; and the passengers arrived safely at King's-cross. In the meantime, as a matter of course, the up and down traffic was entirely stopped. The telegraph at Peterborough was set to work, and information forwarded to Mr. Seymour Clarke, the manager of the line; Mr. Leith, the traffic superintendent; and Mr. Johnson, the engineer, who arrived by special engine at the spot, and gave all requisite instructions. The through traffic on Friday and Saturday was to a great extent suspended, passengers for the north being recommended to take the trains by the London and North-Western and Midland; but, on Saturday afternoon and during Sunday, the road having been put in order, the traffic was resumed, the passengers alighting on the London side of the bridge, and walking round it to the train prepared for their reception on the other side. From the survey made by the officers of the company, it is considered that a new bridge will have to be built, unless engineering arrangements can be made for making the existing structure available for the conduct of the traffic, which appears to be very doubtful. The bridge has been in existence about eight or ten years, and the occurrence is the first of its kind that has happened on the Great Northern Railway.

ITALY.

At the last meeting of the Society of Antiquaries, at Newcastle, a letter from Dr. Bruce was read, which contained the following remarks:—

"The day after my arrival here found me on my way to Pompeii. * * I at once understood the peculiar construction of the Pompeian houses. The restored house in the Crystal Palace gives you an idea of coldness and gloom. At Pompeii, itself, smarting as I did at the end of October under the heat and glare of the sun, I could understand how precious an open roof, and shady corner, and dripping fountains, would be in July. * * It has been an ill-built city. The walls of the houses are like those of London. The masonry of our Wall is much superior to most of that at Pompeii. The buildings consist of tiles, lava, volcanic tufa, and organic tufa, or what we would call petrified moss. It is astonishing how largely this organic tufa, which we are familiar with in the Roman buildings in the North of England, enters into the composition of its buildings. The walls of the city have been originally made of pieces of lava, not much larger than a good-sized fist. It has, however, been repaired at two subsequent periods with large-sized and well-squared blocks of organic tufa and travertine. The fountains in Pompeii are numerous, each being provided with a cistern, something like that at the north gate of Borcovicus. I measured the ruts in the streets. From the centre of the one to the centre of the other is 4 feet 7 inches. I measured one street, which was 7 feet 3 inches wide, and another, which was 6 feet 4 inches. We must not be surprised that the streets in our stations are so narrow. I studied the public baths with care: they are very complete and interesting. The place where the coppers were placed is clearly marked; and you can trace the water in its course, and follow the hot air from the furnaces, under the floors, and up the sides of the rooms. * * I think I now thoroughly understand the meaning of the fir-cone ornament which is so frequently met with in Roman camps. My drawings will explain it. One day we went to Puzzuoli (the ancient Puteoli), where the Apostle Paul landed for Malta on his way to Rome. We trod upon the very stones of the Roman way which he traversed. The amphitheatre here is very complete, especially in the underground arrangements. The Temple of Neptune, where Pompey sacrificed before the battle of Actium, is still to be seen. The Temple of Serapis is a beautiful ruin: it has been submerged by the sinking of the coast, and again raised by volcanic action. The pillars, washed by the sea level, and eaten by the pholas below this line, prove this. I have photographic views which clearly exhibit this striking fact."

STAINED GLASS.

St. Philip's, Earl's-court.—The memorial window to the late Lord Holland has been erected in St. Philip's Church, Earl's-court, Kensington. The principal subjects illustrated are, Our Saviour blessing Little Children, occupying the greater part of the three centre lights, surrounded by a series of smaller subjects illustrating the nine beatitudes; viz.—

No. 1. (Blessed are the poor in spirit)—The Angels appearing to the Shepherds.
2. (—— they that mourn)—The Woman at the Tomb.
3. (——the meek)—The Pharisee and Publican.
4. (—— hunger and thirst after righteousness)—The Adoration of the Magi.
5. (—— the merciful)—The Good Samaritan.
6. (—— pure in heart)—The Annunciation.
7. (—— peace makers)—Figure of St. John.
8. (—— when persecuted)—St. John the Baptist beheaded.
9. (—— when men revile)—Figure of St. Peter.

The window was designed and executed by Messrs. Heaton & Butler, of London; and the wall decorations were by Messrs. Harland & Fisher, also of London.

Christ Church Abbey Church.—A window is in preparation by Messrs. Lavers & Barraud for the great window, at the west end of Christ Church Abbey Church, Hampshire. The subject is the *Te Deum*.

CHURCH-BUILDING NEWS.

Dawlish.—A small Wesleyan chapel has been opened at Dawlish, South Devon. It is built with the local limestone; roof open, of deal, stained and varnished, as likewise the fittings. The narrowness of the frontage necessitated the ⌐ shape. The pulpit is at the meeting of the arms. There is a gallery at the front end, with vestry under. Messrs. Richardson & Reeves were the builders; and Mr. Edward Appleton, of Torquay, the architect.

St. George's (Shropshire).—The chief stone of a memorial church to the late Duke of Sutherland, K.G., has been laid in the district of St. George's (formerly Pain's-lane), in Shropshire. Mr. Street, architect, was selected to make the plans of the church, which will be built in the new portion of the present burial-ground (and at the rear of the old church), which was given by the late Duke of Sutherland; and Mr. Horsman, builder, Wolverhampton, was selected as the contractor. The church is designed to accommodate 700 persons. It is to be rectangular in form, with a chancel of 40 feet by 20 feet; the nave with side aisles and clerestory, 90 feet by 50 feet. At present a tower, about 40 feet high, will be erected at one end; but, if funds can be obtained, it is intended to raise upon it a spire, 150 feet high. The style of the building will be Early English. The cost, without the spire, will be 4,000*l*.; but,

with that addition, about 5,000*l.* On the south of the church the tablet, to record the memory of the late duke, is to be placed.

Whitchurch.—The church of St. Nicholas, Whitchurch, has been restored. The edifice, which is of Norman architecture, of the early part of the twelfth century, has been nearly re-built, at a cost of about 800*l.*; but no additional accommodation has been made, the church being already sufficient for the wants of the parish. The edifice was in a very dilapidated condition. The restorations have been conducted under the superintendence of Mr. Street, architect; Mr. Hughes, builder, of Bristol, being the contractor.

Farnworth (Bolton).—The new Wesleyan chapel recently erected in Vicarage-road, Farnworth, has been opened for Divine worship. The style of the building is Grecian, with a Corinthian interior, and the building is capable of seating upwards of 1,200 persons. It is from designs by Mr. Simpson, of Leeds, who has superintended the erection of the building. It has been built by Messrs. S. & W. Cope, of Farnworth; the pointing and plastering by Mr. Smith, of Oldham. The cost of the building will be about 4,000*l.*

Bradford.—The various works connected with St. Thomas's Church have been let, and the building is now started, on a site (which has been given by Mr. F. S. Powell) close to the Ragged School, Cropper-lane. The style of the building is Geometrical; and the plan consists of a nave, chancel, north and south aisles, together with organ chapel, vestry, and the tower and south porch. It is only proposed at present to carry the tower as high as the first stage; but, when the designs are fully completed, it will be crowned with a lofty spire. The design is of simple ecclesiastical character, with two-light, four-light, and six-light tracery windows; and with stone dressings, quoins, and internal piers, arches, and other finishings. The roofs are of open timber, stained and varnished; and accommodation is provided for 700 worshippers. The estimated cost, including endowment, is 5,000*l.*, towards which 1,200*l.* is yet required. The works are under the direction of Messrs. Lockwood, Mawson, & Mawson, architects, Leeds.

York.—The church of St. Mary Bishophill Junior has been re-opened. In the interior of the church, the old square pews, which were only capable of accommodating 180 persons, have been removed; and, in accordance with a plan by Messrs. Atkinson, architects, sittings have been obtained for 360. A west window has been substituted for a doorway which led into the churchyard. The tower has been fitted with seats for the accommodation of children; the floor gradually rising so as to command a view of the church. The floor level has been raised 10 inches, and the whole concreted, and the floors and aisles laid upon sleeper walls, so as to secure freedom from dampness. The wooden windows of the south aisle, and its modern brick porch, have been taken away: the aisle has been completely restored; and a stone porch and three varied Decorated windows have been erected, from designs by Messrs. Atkinson. The chancel has been completely restored in accordance with the original work, except that an open timber roof has been substituted for the flat ceilings of the chancel and aisle. Mr. Ewan Christian, the architect of the commissioners, superintended the restoration of the chancel, except as to the internal fittings and seats. The whole of the work has been executed by the various contractors. The mason work is by Mr. Keswick: Mr. Lawson was the joiner; and the windows were glazed by Messrs. Hodgson, in cathedral glass, with margins varied by blue or ruby colours. Mr. Poulter varnished the seats, preserving the appearance of the wood. The church is fitted with three star gaslights, one in the tower, one in the chancel, and one in the body of the church, the plan being suggested by Mr. Braddock, of the York Gas Works. The east window has a richer border than the others: the central light contains a group, the subject being Christ receiving Children. The emblem at the crown of the window was given by Mr. Hodgson, who executed the whole. The expense of the restoration amounts to upwards of 800*l.*, and the subscriptions raised reached between 600*l.* and 700*l.*, leaving a debt of 150*l.*

South Shields.—The foundation stone of a new church has been laid near to the Tyne Docks, South Shields, for a new district. The edifice, which is designated St. Mary's, is endowed by the Dean and Chapter of Durham; who, on disposing of the land to the North-Eastern Railway Company for the purposes of the Tyne Docks, devoted 5,000*l.* of the purchase-money as an endowment fund. The Dean and Chapter of Durham started the subscription list with a donation of 1,000*l.* Mr. Dobson, architect, Newcastle, was requested to prepare plans for a church so constructed as to hold 700 people, or thereabouts, and to be capable of increase at a comparatively trifling outlay by the addition of side galleries. The plans, when approved, were entrusted to Mr. Joseph Elliott, builder, North Shields, to whom the contract for the various works was let for 3,250*l.* The site is at the junction of two principal roads, leading to the Docks and the New Town adjoining, and the ground has been presented by Mr. J. Williamson. The building, which is in the Gothic style of architecture, was commenced in May last, and it is now nearly ready for being covered in. It consists of a nave 84 feet by 25 feet, terminating with a chancel, or altar recess, 18 feet 6 inches by 22 feet, having open timber roofs, the apex of which will be 52 feet from the ground. There will be a north aisle 66 feet by 12 feet, and a south aisle 79 feet by 12 feet, both having open timber roof, the apex of which will be 40 feet from the ground, together with a vestry at the east end of the south aisle. The church will be the largest in South Shields except St. Hilda's. When finished it will contain sittings for 528 adults on the ground floor, and for 136 children in the gallery, making a total of 664 sittings, 400 of which are to be entirely free. The present plans leave the tower to be finished at a future time. The subscriptions amount at the present time to 2,525*l.*, and it is calculated that 4,000*l.* will be required.

Invergordon.—The new "Free Church" here has been opened. It stands in the centre of the town, about 60 yards to the rear, on the north side of the principal public thoroughfare, and on the right of the road leading off to the castle. The most prominent object is the spire, which is upwards of 140 feet high. The whole building is in the Early Decorated style, and comprises a nave, 76 feet long and 36 feet broad, and transepts near the end, 18 feet deep. The principal door of the church (beneath the steeple, and facing the public street), is deeply set in carved arches. Above it is a traceried window; and, on the third stage, the clock and belfry-openings. Surmounting the tower is a broach spire, with spire-light and gilt vane. The sides of the church present a light and marked outline, with gabled windows at the nave, and buttresses supporting the transepts. The inside of the building presents a plain appearance. The roof is made of large pine beams, varnished, stretching across each other from end to end, and resting on stone corbels. The height is 45 feet. The pulpit (or rather platform) is placed at the extreme end of the church, opposite the principal entrance, and is about 4 feet above the level of the floor, and about 20 feet in width, with a raised desk in the centre. There are numerous ornamented windows on all sides of the building. The architects were Messrs. Ross & Joass, of Inverness; and the mason work has been carried on, since the death of the original contractor, by Mr. James Wilson, and the other departments are by Messrs. Ross, Tain.

PROVINCIAL NEWS.

Norwich.—The building described, by an error in printing, on the 16th instant, as the new "Town" hall, is the new "Corn" hall, or Corn Exchange.

Colchester.—The Central National Schools, erected at a cost of 3,500*l.*, have been opened. The structure is in the Gothic style, composed of red brick, with Caen stone windows, copings and weatherings; and comprises three school-rooms and four class-rooms, besides the porches. The central room is for the boys of the Blue Coat School: the other rooms are,—one to be used for girls, and the other for smaller girls. The buildings were designed by Mr. H. W. Hayward, and have been erected under the superintendence of the architect and a building committee; the contractors being Messrs. Rayner & Runnacles, of Halsted.

Ashbourne.—Ashbourne Hall has been recently purchased by Mr. R. H. Frank, of Liverpool, and is now undergoing extensive alterations; an entire new wing being added to it, and other important alterations being made. The workmen, to the number of upwards of sixty, have been entertained at a supper, given by Mr. Frank at the Green Man hotel. Mr. Wilson, the architect, was in the chair. Besides the additions to the hall, according to the *Derby Advertiser*, other extensive buildings are being erected, embracing six first-class loose boxes, stabling for six or eight horses, coach-houses for six large carriages, with all conveniences; the whole range being two stories high, and embracing all recent improvements. The whole of these works are being executed from designs by, and under the immediate superintendence of, Mr. Benjamin Wilson, architect. Mr. E. Thompson, of Derby, is the builder.

Bristol.—A new public hall for this city is to be erected by a company in connection with the proprietors of the old hall. It is proposed to accommodate 3,000 persons, or more than twice the number at the Broadmead-rooms. The prospectus estimates the cost of the proposed erection, including the purchase of the site, at 12,000*l.*, which it is intended to raise in 1,200 shares of 10*l.* each.

WOLVERHAMPTON.

The Sanitary Question.—Every one, we dare say, has heard, in one form or another, of the law action as to an old pair of bellows, the defendant's pleas in which were, 1, There were no bellows to mend: 2, The bellows were mended. We cannot help being reminded of this celebrated case by the Rev. J. H. Iles's defence against our sanitary "action," *in re* Wolverhampton. Referring, at a mayoral meeting, to the church and churchyard; and in particular to a certain pigsty, that "a writer in a paper called the *Builder*" had stigmatized and "attacked;" the rev. gentleman's pleas are, in effect, 1, There *is* no such pigsty: 2. "Next year a handsome building," in the shape of an infants' school, is to take the place of "that pigsty," which, by some singular jugglery, assumes the shape, in the mean time, of an "old school house," with about 150 infants, which the reverend gentleman somewhat irreverently considers may be the "small pigs" that occupied the pigsty. In all good humour, we only say that, so long as our strictures lead to such improvements, we care little for the inconsistencies of the pleaders, either for pigsties, or for old tumble-down school-houses equivalent to pigsties, and requiring removal. That our photograph of the rubbish-yards, back lanes, and tumble-down cottages, into which the Rev. Mr. Iles admits that we must have been "peering," has moved the Wolverhampton people by the truthfulness of the portrait, seems pretty evident; and we are glad to observe, from the local *Chronicle*, that, at a meeting of the Town Council, held last week, the sewerage committee presented an important report with reference to a new plan for carrying into effect a comprehensive system of sewerage in the borough, at a cost of 35,000*l.*

Blakenhall Church Schools.—The new day schools, recently erected in connection with the Church of St. Luke, have been opened. The erection had been intrusted to Mr. Cockerill, from designs by Mr. E. Banks. The principal portion of the building is in the form of a cross; and this forms the room for the boys and girls of advanced years; the boys being divided from the girls by a wooden partition, which may be removed as occasion may require. A wing at the lower end of the building forms a room for infants; the total number of children which the establishment is calculated to accommodate being about 500. The cost of the erection is about 1,200*l.*; and this will be defrayed partly by the gift of the Rev. W. Dalton, the founder, partly by Government grant, and the rest by public subscription.

NEW ADELPHI THEATRE.

"The Octoroon" is a remarkable drama, full of striking effects, and exceedingly well played. It may not run quite so long as the "Colleen Bawn" did, but will nevertheless fill the house for many, many weeks to come, and other houses too. There is the same air of reality about it in the getting up that was observable in its predecessor. *Pete is* an old body slave: it is not Mr. Jamison acting a slave. *Wahnotee* is one of Catlin's real Indians (not Mr. R. Phillips); *Picayune Paul* must be a quadroon boy; and as to *Salem Scudder*, though the bill identifies him with Mr. Boucicault, we are not to be taken in: his country and calling are quite evident. *McClosky*, the villain of the piece, is played with becoming ferocity and malevolence by Mr. Emery; and Mrs. Boucicault winningly makes herself so touchingly felt, that the town is half disposed to be angry with the author, because, in order to complete the moral he would draw, she does not remain alive at the close to become the happy wife of George Peyton and the mistress of Terrebonne;—the laws of Louisiana, which forbid the marriage of a white man with any woman having the smallest trace of black blood in her veins, notwithstanding. The scenery, although not strikingly attractive, is solid, fitting, and effective; especially the first scene, "The Plantation of Terrebonne, in the

Attakapas," and "The Cane Brake," in the fifth act, showing sunrise over the Attakapas, executed, we believe, from a picture by Mr. Cropsey, the American landscape-painter.

A SANITARY HINT FOR THE PORTUGUESE.

The *Medical Times* suggests that the new King of Portugal should send over to England for medical men to examine and report on the causes of fever, putrid sore throat, &c., in Lisbon, from which so many severe losses have recently taken place in the Royal Family. We do not object to the inspection by medical men, if this is to be followed by a report, plans, and estimates of sewerage, drainage, and a good supply of pure water, by some sanitary engineer of known ability in this department of civil engineering. It is quite time for the devising and executing of proper sanitary works in the capitals of Europe, and it is of the utmost importance that the work should fall into competent hands. We can show some completed works in England which will bear examination, as having stood the test of time. A commission of Portuguese medical men and engineers may gain useful information on sanitary works in England, and we think that we can promise such commission every facility and assistance in their inquiries that they can desire. Engineers from America and from Berlin have received such assistance and information, which they have duly acknowledged.

ARCHITECTURAL EXAMINATIONS AND THE INSTITUTE OF BRITISH ARCHITECTS.

On carefully reading the observations made by the several members of the Institute, there can be but one opinion as regards the observations of Mr. Cockerell, that the course taken by the Institute "was by far the best step they could take, and which was the only one indeed likely to obtain for the profession the full confidence of the public." It is one that many a young man entering an architect's office would have reason to be grateful and thankful for. How seldom is it that, when a youth enters an office, any care or interest is shown or taken to point out to him the course he should pursue, or the works he should study to obtain that information, which should be his guiding star through life, should he follow the profession? The curriculum and list of works recommended to candidates are very full and valuable as suggestions; but, in order that a youth should not be disheartened at what might be required in his examination, the list might perhaps be revised so as to cull the most useful works for his study; and on passing his examination what objection could there be to present him with a printed diploma from the Institute, which would not only certify that he had passed a creditable examination, but would serve him as a testimonial in after life? W.

CLERKS OF WORKS: THEIR DUTIES AND POSITION.

Sir,—I think all experienced architects must hold the same opinions in reference to the clerk of works as entertained by "London Architect" in his letter in the *Builder* of the 2nd instant; and I doubt not but many of your professional readers can testify as to the existence of such men. The authority of the architect should be felt in his absence as when he is present; and, in proportion as he impresses this, so in proportion will his views and the interest of his client be realized. And in whom should this authority be vested but in the clerk of works? The clerk of works should be to the architect on the works, what his chief assistant is to him in the office; and the man who is not worthy of such confidence should not be called a clerk of works.

The efficient clerk of works should, without prejudice, be able to dictate in every trade connected with a building; and I hesitate not to state that there are many who are capable of doing this. The man whose knowledge is limited to one trade cannot be called a clerk of works, although there are too many with that amount of knowledge who style themselves such. The opportunities of acquiring that general information are not within the reach of all; and, if such opportunities are not at command in early life, he can never become an efficient clerk of works. There is no royal road to the obtaining of such knowledge: it is only to be obtained by careful observation and constant application.

The author of the letter styling himself "Also a London Architect" in the *Builder* of the 9th instant, who would place his clerk of works on a level with the average of builders' foremen, might find in the end, and perhaps when too late, that all the matters of difficulty which he speaks of, as expecting to be referred to himself, might have been settled between his clerk of works and the builder's foreman, as matters of trivial importance. The clerk of works should stand second to none on the works but the architect; and, unless he has the ability to use such authority impartially, he is not a fitting person for the office; and without such power, he cannot execute the duties of his office satisfactorily to himself or his employers. This I state from experience.*

A. B. W.

It has been with no little amount of interest that I have read the correspondence on the above question, and trust that before the same shall cease the subject will receive the fullest ventilation. It is a subject deserving the careful consideration of all architects, and requires a firm determination on the part of such men as myself and your correspondent of last week, "M. M.," to not only protest against the miserable amount of stipend, but the injustice and inconsistency of employing foremen of joiners and masons as clerks of works; men whose previous subordinacy to contractors and builders alone unfits them for the office. Besides this, can it be believed that a man who has served his time to *one particular trade only* is as competent as a person who not only has had considerable office practice, but has made it his study to become *practically* acquainted with *every description* of artisans' work. And yet these knights of the bench and banker appear to have a kind of hold upon our architects.

In conclusion, I beg to call upon your correspondent, "M. M.,"—whose case is so very similar to my own, and whose letter I cannot but admire for the tone of confidence and self-respect with which it is framed, and all others so unfortunately situate,—to stand boldly forward, and, by your goodness, through the medium of the *Builder*, to make known our grievances to the architects *en masse*, who, I cannot but believe, will give the matter their kind consideration; and let us hope soon to see the office of clerk of works raised to its proper standard. Fiat Justitia.

FORM, COLOUR, AND SOUND.

In reference to Mr. Robinson's letter, I beg to state that I think the work by Dr. Henzelman, the Hungarian, published in Paris, is written with the special purpose of comparing the fine arts; at any rate, works in this line are common in Germany. What of Hegel's "Æsthetic?" With reference to the history of Music, I would simply call attention to the fact that it has been subject to the same changes in the mind of man as architecture, painting, and sculpture. Greek music was associated with the dance, and had a dance rhythm: the early Christian left out dance rhythm, and introduced the style of Gregorian chant without dance rhythm: this is characteristic of the Romanesque vigour and strength of construction. Palestrina added harmony to this: then arose the Italian opera, and the return of dance rhythm, with its absence of harmony, quite in accordance with the Renaissance of Roman epicureanism; and gradually we come to Rococo bravura, which, is like mouldings and crockets, something that takes away from the massiveness; and the modern Italian opera is nothing but a waltz with an orchestral accompaniment of the big guitar style. In Germany rhythm was also revived, such as it had been continued all along in the national dance, and with harmony produced the sublime symphony of Beethoven. Wagner comes in this century, and puts dramatic music in rder, as the other arts have been revived.

A. W.

THE EPIDEMIC AT DARWEN.

No sooner does the *Builder* visit a town and issue its notes thereon than there is expressed astonishment at his statements of truth: they are set down as exaggerations—he loves the magnification of nausea of every form—dwelling upon isolated cases, &c. &c. Then start up several champions in the field (not of cloth of gold, but of *dirt*) as defenders of the faith in things as they are, and assert that they are not so bad as they might be—or at least that there are *other* places, if anything, worse than the town or place specially referred to. Now the Darwen epidemic is really a case in point for sanitary reformers. There is such a decided immediate connection between cause and effect as cannot easily be got over by the opponents of sanitary measures, stubborn though those opponents be.

So soon as the epidemic began its deadly work at Darwen, alarm spread, and the Local Board of Health appointed a committee of its members, resident inhabitants, to inquire into the causes. Now we may take an outline sketch of what they have reported, and it may be inferred that it is a fair and *not overdrawn picture of their own condition;* and how like to it is the condition of many places the *Builder* has recently pictured in such truthful detail!

The committee, in their report, say that they find the deaths are going on at the rate of forty-five in the thousand; but, after deducting the cases of typhus and gastric fever, the ordinary deaths are twenty-eight per thousand. Defective house drainage, contents of privies percolating walls of dwellings, contamination of the water supplied for domestic use, pigsties in close connection with dwellings, and, we may add, the overcrowding of three or four families into one small house, are the causes.

Now for the effects:—"In Duckworth-street there are dilapidated privies in a filthy state, and defective drainage, and in one house, three cases of fever; in Vale-street, one cottage without sink-stone or drainage, all slops thrown into the street, no yard or privy, and in this house two cases of fever; and so the catalogue of ill goes on. An eye-witness says that he himself visited 800 cases of fever. In one dwelling four of the inmates were prostrate; and on a table in a corner lay the dead body of a fifth,—a mournful picture, truly.

More could be said; but surely there is no room for an attempt at extenuation of circumstances like the above, which are but a repetition of what you have so ably described; and it would be well if Sheffield and the other places you have reported upon would, like the Darwen men, admit the causes which sweep hundreds to the grave who else might be the sinews of our country, and strive to remove these causes.

It is a poor man's battle, and must be fought out and wrought out by the pure philanthropist.

Blackburn. J. B.

LARGE COOKING APPARATUS, REGENT-STREET.

At Mr. Kuhn's, in Hanover-street, a cooking apparatus has been put up in the centre of the kitchen. It is 10 feet long, 4 feet wide, and 3 feet high. The fire is placed at one end, and beyond it are fitted two large and powerful roasters and two large ovens, the united cubical contents of which are about 56 feet. Over the fire-roasters and oven is placed a hot-plate of 40 feet area; and at a distance of 2 feet above the hot plate is a strong rack for holding and heating dishes and plates. Above the hot plate is a hood, the full length and width of the apparatus, for the purpose of collecting the heat and steam from the hot plate and cooking utensils. These are conducted away through a pipe to a distant shaft. The cooks are protected from the hot plate by a bold copper rail. Two boilers form the back and sides of the fire,—one of them having a large hot-water cistern; the other supplying steam to a steam-chest. Within half an hour of lighting the fire, the apparatus, it is stated, is in perfect working order; and cutlets, &c., are cooked to perfection in the roasters in eight minutes. Mr. Kuhn says he could cook dinners by means of this apparatus for 3,000 persons in one day.

DRY ROT.

The case of dry rot, quoted in the *Builder* of the 2nd November, seems to be an obstinate and almost exceptional one. In every case of dry rot that has come under my notice, I have traced its origin to an insufficiency of proper ventilation; and, although air-bricks have been inserted in this case, it is doubtful if they have not been too sparingly used. Concrete, if of the proper material and properly executed, is a good preventive in damp situations; but, when used for such purposes, it frequently may be found that both material and workmanship are slighted. Broken bricks are sometimes used instead of clean gravel or ballast, and the former will absorb what concrete is supposed to resist. Allow me to suggest that the floors be taken up, and a layer of asphalte, which will cost about 2s. 8d. per super. yard, be spread over the whole surface and carefully jointed to external walls. Reconstruct the sleeper wall

* This note must serve to represent three others to the same effect.

on the asphalte, taking care that the walls are freely perforated. If the aisles are paved, I should recommend that say 4-inch drain pipes be laid transversely at intervals under same, communicating with floors on either side of aisles and directly opposite the air-bricks in external wall. By this process a free current of air will be provided and allowed to play freely throughout the whole space. If new joists are necessary, and are dry and well seasoned previously to being laid, I am induced to think that a good coat of tar would act favourably in resisting dry rot. This would also apply to the underside of floor boards.

AMICUS.

AFTER reading the recent communications respecting dry rot in your publication, I wish to say I have had a similar case to the one last named. It is about four years since I built four houses, the basement on the front having boarded floors, properly ventilated with air bricks.

The rot showed itself first by everything in the room being covered with dust of a reddish colour; rising, as was supposed, from betwixt the boards. After taking the boards up, the sleepers, walls, joists, and underside of boards were found to be completely grown over with fungus; the ground underneath being perfectly dry.

I beg to suggest, sir, the probability of the wood being tainted previously to using.

JONES.

PAYMENT TO ARCHITECTS.

SIR,—Apropos of the proposed scale of professional charges brought forward by the Northern Architectural Association, I would beg to call your attention to a circular just issued in connection with an intended chapel and school at Plymouth.

A chapel and schools are required to be built, at a cost of about 5,000*l.*, and for the competitive designs for these, two premiums are offered, viz., 50*l.* and 30*l.*, with the cool proviso that, should the successful competitor be employed to furnish the working drawings and specification, the committee will graciously allow him a sum not exceeding 50*l.* in addition to his premium.

Here we have a new phase of the professional remuneration question. The fees for the work done, according to the proposed scale, would amount to nearly 200*l.* if an estimate is needed. Yet a building committee in a town of such standing as Plymouth can have the conscience publicly to invite professional men to take a risk, and, if successful, be deprived of half their legitimate fees. Really, one feels almost tempted to advise such committees in future to head their circulars with a line or two of the old song,—

"Will you walk into my parlour,
Said the spider to the fly," &c., &c.

Cases like this will open the eyes of the profession to the urgent necessity of making a firm and vigorous stand against such invasions of their rights. Undesirable as combinations generally are, yet an evil such as this demands some decisive and energetic remedy, a remedy which will only be found in the universal adoption of some fixed standard of professional charges.

No professional man is so ill paid as an architect: the fees of our medical men are paid gladly: our lawyers' charges are settled without demur; yet, when it comes to the architect's turn, he—who ought, in consideration of the amount of wear and tear of brain, of heavy office and other expenses, to receive the highest scale of remuneration—is considered well paid if he gets the lowest: and thus, from a want of a thorough understanding on this point among the profession generally, the architect is left quite at the mercy of unscrupulous building committees and mercenary clients.

W. A. R.

LEEDS PARISH CHURCH.

SIR,—In my letter complaining of the desecration of one of my works, I did not name any party; but I thank Mr. E. M. Barry for his explanation, whereby he shows that he would not have made any alteration without consulting me thereon, which I accept as an apology; indeed, I should never have attributed to him so glaring an absurdity as the "Tudor" window, designed by some architect in Leeds who is evidently no archæologist.

After a lapse of twenty years I was not aware that a living architect should feel no interest in a completed work when committed to the "conservation" of churchwardens, who, by the bye, are noted for their beautifying of churches, though mostly in defiance of taste, judgment, or the most remote sense of propriety: "ne sutor ultra crepidam."

R. DENNIS CHANTRELL.

HULL TOWN HALL COMPETITION.

SIR,—Will you allow me, through the medium of your paper, to ask what the Hull people are doing about their proposed new town-hall? On the 31st of May last I forwarded, in answer to their advertisement, a set of drawings for the proposed building; and from that day to this have heard nothing of them,—at least, nothing definite. It is true, a month or two since, a local paper offered its sincere congratulations to a local man on having gained the "first premium for the new town hall," and also good-naturedly patted on the back another "quondam" local man for obtaining the "second prize;" but for some good reason these congratulations were made premature by the quashing of the verdict of the disinterested "council of six." Next the competitors were informed that Mr. Tite had been, or was to be, called in to sit in judgment on the drawings, and decide as to their several and separate merits; but nothing more is known.

Surely, sir, it is hardly fair to leave architects who, perhaps unwisely and too trustingly, consent to give their time, intellect, and money in preparing competitive designs, so completely in the dark as to what has become of, or what is doing with, their drawings. Surely six months is ample time even for the most antagonistic set of "common councilmen" to come to some understanding as to what is to be done; and in common courtesy to the competitors, some statement as to what is doing should be published in one of the recognized professional papers.

A COMPETITOR.

BILLS OF QUANTITIES AND EXTRAS.

IMPORTANT TO CONTRACTORS AND ARCHITECTS.

Neill v. *Leatham*, administratrix of Mr. C. A. Leatham, deceased. Tried at the Court of Queen's Bench. Mr. Mellish (Q.C.) appeared for the plaintiff, and Mr. Manisty (Q.C.) for the defendant.

Mr. Mellish stated that this was a special case stated by an arbitrator (Mr. James, of Furnival's Inn, London, architect) on a building contract, under which he had awarded a balance of 1,430*l.* 17s. 2d. due to the plaintiff. The plaintiff, Mr. Neill, is a contractor for buildings and other works, and was formerly resident in the county of Durham, but is now at Bradford, in Yorkshire. Mr. Leatham was a gentleman of fortune, who desired to erect a mansion house at Gunnergate, near Middleborough, and for that purpose emplo yed Messrs Pritchett & Sons, of Darlington, architects; who, by his authority, invited tenders for the works, and prepared the necessary plans, specifications, and drawings, and also a certain paper called "Bills of Quantities, for the erection of a mansion for C. A. Leatham, Esq., at Gunnergate:—The following bill of quantities has been made out with the *greatest possible* care, but is not guaranteed correct. Signed Pritchett & Sons, architects."

These bills of quantities having been submitted to all parties tendering, and to be paid for by the successful contractor, were seen by the plaintiff; who, relying upon their accuracy, tendered for the works at 5,000*l.*, and afterwards signed a contract for that amount. The plaintiff executed the work; but, in so doing, it turned out that the "quantities" stated by the architects were 25 per cent. below what the plaintiff was bound under his contract to provide, and did provide, in building the mansion; so that, instead of making any profit, he sustained a heavy loss, while Mr. Leatham got the benefit of a mansion one-fourth larger in all its dimensions than had been represented by his architects, and on which the plaintiff had been induced to enter into the contract.

The arbitrator stated in his award that "the error was not intentional; but, in fact, due care had not been taken on the part of the architects in preparing the 'quantities,' nor on the part of the plaintiff in testing them before he executed the contract." The arbitrator then stated as follows:—"The plaintiff claimed to be allowed for that difference in value, on the ground that so large a difference between the described and the actual quantities was not covered by the words negativing guarantee of accuracy. The defendant denied any liability in that respect. Upon these facts I was of opinion that the plaintiff was entitled to be paid the sum in dispute, amounting to 1,225*l.*; and I allowed it, and it forms a part of the amount whereon the said sum of 1,430*l.* 17s. 2d. is found as a balance." The defendant, who lives at Darlington, and is the widow and administratrix of the deceased, denied liability to pay any part of this sum, and had required the arbitrator to submit that as a legal question to the Court.

It further appeared that in the course of the work certain extras amounting to about 250*l.* were done by the plaintiff upon the verbal orders of the architects, accompanied by certain drawings signed by the architects as instructions to the plaintiffs to do such extra works. The arbitrator stated in his award that such signed drawings "were treated by the parties and acted upon by the plaintiff as written orders," according to the contract, which had stipulated that no extras would be paid for except such as were ordered in writing by Mr. Leatham or his architects. The arbitrator proceeded to state that "the work itself was proper to be done; and when done it was approved of by the architects and by the deceased;" and he awarded the 250*l.* to the plaintiff, subject to the legal question raised by the defendant, whether the signed plans formed written orders within the terms of the contract. The arbitrator had also found and awarded that work of the value of 144*l.* 9s. 9d. had been done on verbal orders by the architects, and work to the value of 21*l.* 19s. had been done without orders; but the arbitrator found that these extra works were necessary, and when done were approved and accepted by the deceased and by his architects; but defendant insisting that the deceased was not legally liable to pay for any of these, they were also submitted by the arbitrator to the decision of the Court; the architects having given written notice that the clause in the contract requiring that all extras must be ordered in writing would be strictly enforced. The arbitrator concluded his award by stating that "the plaintiff has not obtained any order or certificate in writing from the architects as to any part of the balance found due by me i but in point of fact all the works in question were done and completed to their satisfaction, and such satisfaction was by them expressed to the plaintiff, and to the deceased, who adopted such works."

The arbitrator having awarded these several sums in favour of the plaintiff, subject to the opinion of the Court on the legal questions raised by the defendant, the arbitrator had proceeded further to award, in pursuance of the discretion vested in him by the order of reference, that, whatever might be the opinion of the Court on such questions of law, the defendants should pay all the costs of the reference and award.

The defendant had obtained a rule to set aside the award as unjust in condemning her in the costs if the plaintiff should be held by the Court not to be legally entitled to the several sums awarded by the arbitrator.

Mr. Mellish having argued the right of the plaintiff to recover in respect of the 1,225*l.* deficient in quantities, notwithstanding the express contract to do the whole work for 5,000*l.*, on the ground that the quantities formed part of the contract itself, and the discrepancy was too great to be covered by the saving words;—

The Lord Chief Justice intimated that the plaintiff had improvidently assumed, because of the statement on the head of the bill of quantities, that those quantities were rightly ascertained, and had acted upon it, and had made his contract. I do not know, he added, how we can vary it. It may be a very hard case, but I do not know how the plaintiff can get out of it.

Mr. Justice Blackburn.—It is a representation preliminary to a contract, afterwards reduced into writing, not part of the contract itself.

Mr. Mellish next argued the plaintiff's right to the 250*l.* for work ordered by drawings, on the ground that the drawings signed by the architects were sufficient written instructions to meet the words of the contract; and he sought the opinion of the Court for the guidance of the architect for whose certificate the plaintiff might yet have to apply.

The Court were of opinion that, as the drawings would be understood by a builder as an instruction to him, telling him what to do, they were sufficient written instructions within the terms of the contract. The architect, however, had not certified these so as to entitle the plaintiff as yet to recover.

Upon the two items of 144*l.* found to have been done on verbal orders, and as to the 21*l.* done without orders, the Court decided that, although the defendant had adopted and got the benefit of the work; yet, on the strict terms of the contract, the plaintiff was unable to recover.

The Lord Chief Justice.—It must be done to the entire satisfaction of the architects, and then you want the written certificate besides: you have the satisfaction, but not the certificate.

Mr. Mellish.—The result will be that the plaintiff is not to be paid for his alterations or his additional quantities.

The Lord Chief Justice.—It is very hard indeed.

Mr. Manisty, for the defendant.—The arbitrator awarded a final balance of 1,430*l.* 17s. 2d. That includes the 1,225*l.* The error and alterations were an unfortunate thing for us, for we never should have made a contract for more money than we intended to expend in building. No doubt it is unfortunate for them as well, but they have their remedy at this moment, against the architect, for they employed him to take the quantities, and paid him for doing it; therefore I feel no difficulty about that, for they will get their money from him.

The Lord Chief Justice.—Do you mean from the architect?

Mr. Manisty.—Certainly, my lord. He was their agent: the bill of quantities was made out, and they paid him for it. The man who made the mistake must bear the loss.

The Lord Chief Justice.—Except that you have had the benefit of the work.

Mr. Manisty.—Your lordship would not like to make a contract for 5,000*l.*, and then be told you are to pay more.

The Lord Chief Justice.—If I employ an architect, and he misleads a man, telling him he will have a legitimate profit when it turns out to be a great loss, the case bears a different aspect.

The Court then proceeded to the consideration of the question of costs of the reference and award, which had been ordered by the arbitrator to be paid by the defendant, whatever the result of the case on the legal points, and were stated to be very heavy.

The Lord Chief Justice.—An arbitrator may say, I am obliged upon legal grounds to make an award in favour of the defendant, but I look upon the defence as so unrighteous and iniquitous, that I exercise my power, and award the costs to be paid by the defendant.

Mr. Manisty.—I do not think another man would have done it. I can hardly conceive any human being who knows anything of the principles of law and justice who would say, although there is no cause of action, yet you shall pay an enormous sum for costs.

The Lord Chief Justice.—I do not agree with you. If an arbitrator says, that on purely technical grounds he is obliged to decide in your favour, and yet your resistance to the claim is iniquitous, he may be quite right in ordering you to pay the costs.

Mr. Justice Blackburn.—The practical result is, that the technical matter,—the want of the architect's certificate,—makes it that the plaintiff cannot legally recover anything. Whether in point of fair dealing and equity he should recover anything was not the question with the arbitrator, who was to exercise his discretion as to costs.

Mr. Manisty.—By the contract these extras were to be valued by the architect, and not by an arbitrator.

The Lord Chief Justice.—You have established the arbitrator as the judge between you, and you have left the matter to him as to who should pay the costs of the reference, and he has decided. There is nothing illegal in his decision. I am strongly against you both on the law and on the facts.

Mr. Justice Wightman and Mr. Justice Blackburn having also strongly expressed their opinions in unison with that of the Lord Chief Justice, the rule for setting aside the award was discharged, and the defendant left to bear all the costs of the reference and award.

Books Received.

Revue Générale de l'Architecture. 8, Place St. Michel, Paris. London: Barthés & Lowell, Great Marlborough-street. Nos. 4, 5, 6, 7.

ALL who are interested, or are likely to be interested, in the construction and arrangement of theatres, should obtain the four numbers noted above, of the "Revue Générale," even if they do not become permanent subscribers to the work, which is the better course. Our readers are aware of the recent competition of designs for the proposed new opera-house in Paris, on which occasion seventy competitors submitted 171 *projets*. We gave particulars of some of the designs, and such remarks as grew out of the subject. To illustrate these designs, Mr. Daly has issued twenty-three sheets of plans and external views, each containing two or more drawings, with descriptive references. All the rewarded designs are not included, but will probably be given hereafter.

The authors of the five designs to which the offered premiums were awarded, Messrs. Ginain, Crépinet & Botrel, Garnaud, Duc, and Charles Garnier, again competed; and Mr. Garnier was named unanimously for the commission. It is to be regretted that the designs submitted for the ultimate competition were not exhibited to the public, nor did the jury publish any report upon them. A very complete programme, however, on the various points to be attended to in designing an opera-house was drawn up by them, and is printed in the "Revue." An introductory article is also given. In the course of the latter it is stated that the stage of the Boston opera-house is so well arranged, that the business of it can be managed

with the aid of twenty-five workmen; whereas, the stage of the Paris opera-house requires 100. It is to be regretted that details of that theatre have not been published. In Paris, as we have before now said, the machinery of the stage is by no means so good as that of Germany.

In again bearing hearty testimony to the value of Mr. Daly's work, we have pleasure in mentioning that on the occasion of the last birth-day of the Emperor, when, according to custom, various recompenses and decorations were awarded, Mr. Daly, on the proposition of the Minister of Public Instruction, was made Chevalier of the Legion of Honour.

Some Account of the Church of St. Mary, Stone, near Dartford. By G. E. Street, F.S.A. London: J. Russell Smith. 1861.

Stone Church is well known as offering fine examples of Early English work: casts of the well-known beautiful foliage in the spandrils of the arcade round the chancel are to be found in our museums. The church had been allowed to fall into a bad state, and all will rejoice to learn that steps have been taken, and are being taken, to sustain and restore it to its original condition. The work before us is a reprint from the "Archæologia Cantiana," and is sold for the benefit of the Stone Church Restoration Fund. Mr. Street has brought together such few notices of the church as exist, and given a detailed architectural description of the fabric, with some very good engraved illustrations. Mr. Street thinks the church could have hardly been commenced before the accession to the see of Bishop Laurence de St. Martin, who was bishop from 1251 to 1274. The date has usually been placed ten years earlier than the first of these,—we should be willing to accept that ourselves, but are not at all disposed to contend for it. Our author has little doubt that the architect of Stone Church and the architect of Westminster Abbey were the same man, and the chief portion of the latter building was erected during the episcopate of Laurence de St. Martin. As part of the evidence in favour of this belief he says the same *general system of proportion* is observed in the minster and the village church.

"In both, the width from the aisle walls to the centre of the columns is equal to half the width of the nave. At Westminster the height is given by three equilateral triangles, whose base-line is the width across the nave from centre to centre of the columns; and two of these triangles give the height for the springing of the groining, and the third the height of the groining to its apex. At Stone, if we erect triangles on the same base-line, the first gives the top of the capitals of the nave arcade; the second, within very little, the height of the top of the wall; and the third may very well be supposed to have marked the height of the ridge of the timber roof. The width of the bays in the nave of Stone is equal to the diagonal of half the width of the nave; and the width of the bays in the chancel is equal to the diagonal from the centre of one column to the centre of the nave or aisle opposite the next column; whilst the height of the chancel is given by two triangles, similar to those in the nave, whose base is the width from centre to centre of the groining-shafts."

The wall arcading in the two buildings is nearly identical.

VARIORUM.

"A Manual of Structural Botany, for the Use of Classes, Schools, and Private Students. By M. C. Cooke. With upwards of 200 Illustrations by Ruffle. Hardwicke, Piccadilly." This little manual is certainly one of the most instructive in small compass we have ever seen. It was prepared by Mr. Cooke, of the Twickenham Economic Museum, to supply the want of a cheap manual to place in the hands of students in the botanical classes established for operatives in connection with the Department of Science and Art; and an excellent one it seems to be: the illustrations are profuse and highly instructive.——"Elementary Treatise on Physics, Experimental and Applied. By Professor A. Ganot. Translated and edited from the ninth edition, with the author's sanction. By E. Atkinson, Ph.D., F.C.S., lecturer on chemistry and physics at Cheltenham College. London: Baillière." Parts I. and II. To any one inimically disposed, it would not be difficult to damage a work such as this, by pointing out an error or two, of more or less serious importance, as representative, by implication, of the general characteristics of the whole work; but a treatise on physics which has withstood the criticism of eight editions cannot be a bad one in the original; and a translation by a college lecturer on physics ought to be a good one, as we dare say this will turn out to be when fairly before the public in a completed form. The work is finely printed, and is illustrated by many very superior engravings.

Miscellanea.

Building for the Blind Females of Ireland.—It appears there is a larger proportion of blind in Ireland than in any other country of Europe except Norway. They number more than 8,000! One-half are females. Some Protestant friends have now determined to establish in Dublin a first-class national, industrial, and Christian asylum, as "a school for the young and refuge for the old," capable of enlargement, but to open with room for from seventy-five to one hundred inmates. The Lord Lieutenant and the Archbishop of Dublin laid the foundation stones of asylum and chapel in June, 1860, and aid is being sought that the whole may be opened in May, 1862. About one-third of the required total sum has been given, and one-third of the building is erected.

A Storm bursting on the Vatican.—A letter from Rome, in the *Monde*, says:—"During the terrible storm which burst over this city, two evenings back, a waterspout in the form of a cone, wide and luminous at the upper part, traversed the gardens and the vineyards near the San Spirito gate, and fell on the Vatican. The eighty lightning conductors which protect that residence first received the discharge; after which the point of the cone was seen to whirl round in the great court of St. Damaso, on which the fresco paintings of Raffaelle open. Immediately the large glazed doors and the immense windows of the gallery were blown in and smashed to pieces. From the detonations and frightful noise, which made the palace tremble to its foundations, some persons felt persuaded that a mine must have exploded beneath the Pope's apartment. The large Genoese slates, more than a third of an inch in thickness, which cover the Belvedere, flew about like so many feathers. Fortunately none of Raffaelle's pictures were injured. The arsenal suffered but slightly."

Leeds Mechanics' Institution Soiree.—The annual meeting of the members and friends of the Leeds Mechanics' Institution and Literary Society has been held in the Town-hall, under the presidency of Lord Stanley, M.P. The hall was well filled, and the proceedings were commenced by Mr. John Hope Shaw, president of the institution, who made a favourable statement as to the position and prospects of the society. Among the resolutions passed was the following:—"That this meeting regards it as a subject for congratulation that, notwithstanding the general depression of trade, consequent on the unsettled state of trade on the continent of America, the subscription list to the funds for the erection of a new Mechanics' Institution and Schools of Art and Science has reached the sum of 7,500*l.*; and pledges itself to use the necessary exertions to raise the remaining sum, 2,500*l.*, still required, in order to commence the erection of the new building as early as possible." The chairman presented to Mr. Walter Smith, head master of the Leeds School of Art, a painting executed by one of the pupils, and subscribed for by the students generally; his lordship remarking that the work did very great credit to the school.

Lord Caithness's Pavement Works.—The extensive quarries which have been opened, and the pavement works, railways, and harbour erected by Lord Caithness on the estate of Barrogill, says the *John O'Groat's Journal*, are well worthy of a visit. The quarries were opened in 1856. Roads have been formed; quarries opened; substantial, neat, and comfortable cottages erected; a large and increasing pavement trade established; an excellent and commodious harbour constructed; machinery driven by steam erected for sawing, polishing, and scuffling the flags as they are taken out of the quarries; and railways laid down, on which the trucks for transporting the flags and for carrying away the rubbish are drawn by horses. His lordship, who is possessed of great engineering abilities, has had the machinery employed in the preparation of the material made to his own designs. Some of the flags raised are of very large size. The far-famed steam carriage has been pressed into the service: it may now be seen tugging away most vigorously at a huge quarry pump, and lifting its four thousand gallons of water as easily and economically as it formerly accomplished its seventeen miles an hour. About a sixpence worth of coal is sufficient for nearly ten hours' work, during which time it will lift from a depth of thirty feet and discharge over ten cubic feet, or 62½ gallons, of water per minute, or 37,500 gallons in the ten hours. There is also in course of erection an apparatus for raising the stones from the bottom of the quarry to the trucks above, which is to be worked by the same engine.

Wall Paintings.—According to the *Literary Gazette*, the painter Leys has received a commission to execute, in a hall of the Hôtel de Ville at Antwerp, a series of wall paintings, for which he is to receive 200,000 francs. We are anxious to see the same thing done oftener in England.

Railway Matters.—A survey of the proposed line between East Grinstead and Tunbridge Wells is now being made, for the purpose of preparing the plans, &c., to lay before Parliament. With the exception of the immediate vicinity of East Grinstead, there will, we believe, be no cuttings of any extent. This line will not only be of great local importance, but supply the only missing link required to connect the Mid-Sussex Railway with the lines in East Kent and North East Sussex.

Winchester: the Removal of the County Hospital.—The second meeting of the members of the special committee of governors appointed some time since to take into consideration the sanitary condition of the hospital, its extension on the present site, or its removal elsewhere, was held last week, at the committee-room of the institution. The reports of the medical men attached to the hospital were laid before the committee and discussed. Nothing decisive was done, and it seems that much difference of opinion existed as to what course should be adopted. An adjournment was ultimately agreed to for three weeks.

The Uses of Drawing.—At the Wakefield Mechanics' Institute lately, Mr. Walter Smith, of Leeds, delivered a lecture "On the Uses of Drawing." At the close of it he said,—Some people have an objection to teach children in public schools any sort of drawing, on the plea that it is an accomplishment, and working men have no need of it; but this is ridiculous, for the best thing that can happen to the trade or manufactures of a district is for all the children in all the schools to be taught to draw. As a means of expression, drawing is a universal tongue; and, as a cultivator of taste, I think you will allow that drawing is a valuable means. And now I will anticipate a question that will arise in the minds of many working men in this room. Many of you are this moment thinking that you never had a taste for drawing, and that therefore you could not learn if you began now. To this I will say, don't believe it. I will give you my verdict, and ask you to take it for what it is worth and no more. I have been engaged in teaching for five years, and during that time I have taught above 4,000 individuals of both sexes, and every rank and age. It has been my fortune or misfortune to have been a pioneer in every appointment I have yet held, so that I have always had raw material, and not picked raw material, to work upon. Yet in all my experience I have never found one individual who could not learn to draw.

Playgrounds, and the Streets: Enlisting the Ladies.—The *Queen* says,—"There are two matters of genuine public interest, both of which have been a good deal written about of late years—first of all, we believe, in the *Builder*—and both of which would have, we should imagine, some interest for women, though neither of them has attracted so much of their attention as might have been expected. There is nothing new to be said about them, in the way of stating their claims upon public attention, but we may take the opportunity afforded by recent discussions, and able discussions, of one of the topics in question in the *City Press*, and by a practical movement with reference to the other on the part of the Earl of Derby, somewhere in the provinces, within the last week or two, to refer to them for the purpose of inviting the co-operation of ladies of culture and energy, in forwarding two agreeable and useful designs. The first—for which there is an association formed, though one does not hear much of it—is the *formation of playgrounds* for children in great towns: the second is the *planting of trees*, for both sanitary and ornamental reasons, *in our streets*. The playground movement does not go on with half the spirit that is desirable; and the tree movement is, as yet, only a movement on paper. It is not, of course, to be expected that ladies, being convinced that 'something green' in popular places is an excellent thing for keeping the air sweet, should rush out, here and there, spade in one hand and sapling in the other, and scatter little oaks and lindens about the thoroughfares. Besides, the Board of Works will not let them. But it does seem hard that, with a surplus young-ladyhood of many, many thousands, we have neither enthusiasts for the young who will urge on the setting-out of playgrounds, Naïads to look after our drinking-fountains, nor Dryads to look after our bit of wholesome verdure."

GAS IN SPAIN.—The Spanish *crédit mobilier*, of which the capital is 24,000,000 francs, have invested about 7,000,000 francs in gas works at Madrid, which are so remunerative as to assure the payment of the interest on the whole capital of the *crédit mobilier*.—*Journal de l'Eclairage au Gaz.*

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the meeting to be held on Wednesday, Nov. 27, Mr. T. Wright will read a paper on "Recent Discoveries on the Site of the Friars at Ludlow," and make report on "Discoveries in the Cemetery at Wroxeter;" the Rev. E. Kell a paper on "The late Excavations at Netley Abbey;" and Mr. Syer Cuming on "Roman Antiquities in Devon."

GREAT WESTERN RAILWAY AND LONDON GAS. We learn from a correspondent that the Paddington railway station is now supplied with gas from works which have been put into operation during the last two years at Wormwood Scrubs, Kensal-green, built on some waste land at the side of the line. The land was given by the railway company on condition that the Paddington station and hotel should be supplied with gas at the rate of 2s. 10d. per 1,000 cubic feet. Mr. Gooch, locomotive superintendent, has charge of these gas works. Walcott's patent gas retort bed has been put up there, built in the space, it is stated, which previously only contained the power to generate one third the gas which can now be made.

PROTECTION TO INVENTORS IN COMING EXHIBITION.—A correspondent writes,—"I have just been reading with a fluctuating pulse the communication which appears in the *Builder* respecting the probable benefit that might be conferred on the poorer class of inventors by enabling them to show their improvements at the forthcoming International Exhibition, without danger of injury from the plagiarism of other parties; and now send for your perusal the manuscript of a trade circular which I lately prepared in regard to my own position, as proof of both the value and urgency of some such thing being done. There is, in at least my own case, the best evidence for some such relaxation of the patent laws as suggested for the time being; while no doubt a large number of others in a similar situation are to be found lurking about in their like hopelessness in the three united kingdoms, all wishing it were otherwise in regard to the year 1862, but wholly despairing of any such change.—J. D. D.

INSTITUTION OF MECHANICAL ENGINEERS.—On Thursday in week before last, the general meeting of the members of this Institution was held at the Society's Rooms, Newhall-street, Birmingham, Mr. Sampson Lloyd presiding. Mr. C. De Bergue, of Manchester, read a paper descriptive of a rivet-making machine, which makes the rivets by a continuous motion. The next paper was "On an Application of Giffard's Injector as an Elevator for the Drainage of Pit Workings," by Mr. C. W. Wardle, of Leeds. The third, by Mr. C. P. Stewart, of Manchester, was a "Description of Sellers's Screwing Machine," in which the screw thread is cut at a single operation, and the finished bolt is realized by the withdrawal of the dies; the machine being driven continuously in one direction, without reversing or stopping. One of the machines was exhibited in working order, together with specimens of the different sets of dies used in it, and of the bolts screwed.

COMPENSATION BY THE METROPOLITAN BOARD OF WORKS.—An inquiry was held at the Swan Inn, Stratford, last week, before Mr. T. M. Gepp, Under Sheriff, and a special jury, for the purpose of assessing the compensation to be paid by the Metropolitan Board of Works to Mr. James Bowman, for the damage sustained by him in consequence of the taking by the Board, under the compulsory powers of their Act and for the construction of the main drainage sewer, of a portion of the garden belonging to Mr. Bowman, at Plaistow, and of the severance of such portion from the other part of his premises. Mr. J. H. Lloyd, Q.C., appeared for the claimant, and Mr. Montagu Chambers, Q.C., for the Board. On behalf of the claimant several local surveyors were called, who proved that the recent great increase in the population of Plaistow and the neighbourhood, and the construction of the Victoria Docks, had created a great demand for house accommodation; and consequently the land taken by the Board had become very eligible for building purposes; and also that the construction of the sewer had deteriorated the value of the land retained by the claimant, considered as a building site. No witnesses were called on behalf of the Board, but Mr. Chambers addressed the jury in reduction of damages. The jury ultimately found a verdict for the claimant for 700*l*.

EXPLOSION OF A BOILER AT SARREGUEMINES. On the 17th ult. a boiler explosion, caused, it appears, by incrustation, occurred at Sarreguemines. Four were killed. The bodies of two were found 200 mètres from the factory. The adjoining convent and sous-prefecture were unroofed.

LAMB AND FLAG RAGGED SCHOOLS, CLERKENWELL.—The new building erected for these schools, in Lamb-court, Clerkenwell (of which we spoke when it was an intention only), has been opened for use. It contains three school-rooms. Mr. W. P. Griffith was the architect.

DRINKING FOUNTAINS AT THE CRYSTAL PALACE. At the suggestion of the National Temperance League, who called attention (as we did) to the total want of drinking-fountains in the grounds outside the palace, and to the fact that the fountains inside the building were not only too few in number, but placed in positions not easily accessible to visitors; the directors took the subject into consideration, and have sent a letter to the committee of the League, thanking them for the suggestions offered, and stating that they will be carried out as far as possible.

THE DESIRED ROAD ACROSS HYDE-PARK.—We are glad to hear that a public meeting will be held at the Vestry-hall, Paddington, on Tuesday next, for the purpose of considering the expediency of having a road or subway across Hyde-park, connecting Paddington and Bayswater with Brompton and South Kensington. We still incline strongly to Miss Martin's proposed subway, published in the *Builder;* and have reason to believe that her Majesty's Chief Commissioner prefers it to any above-ground road. The model and plan will, doubtless, be at the meeting, and should be carefully considered.

FIRE AT A CHURCH.—St. Matthew's, Oakley-square, St. Pancras, has suffered damage from fire. Some of the neighbours had their attention directed to dense masses of smoke pouring forth from the under part of the aisles. Alarm was given; and, by dint of great exertions on the part of the firemen, the flames were ultimately extinguished, but not until considerable damage was done to the edifice, including the floorings, joistings, and the porch. The outbreak was, as usual, caused by the over-heating of the furnace used for warming the church. This is, doubtless, only the first of a regular series of such casualties as the winter sets in.

THE AREA IN FRONT OF ST. PAUL'S.—Correspondents are reviving our long-ago urged improvement, the removal of the railings around St. Paul's Cathedral. One signing himself "A Citizen" writes: "As it is desirable we should have our house in order in the coming year, will you allow me to ask the Dean and Chapter of St. Paul's Cathedral, through your columns, whether it is possible a decision can be arrived at regarding the disposition of the area at the west front of that building? Can we not have the iron railing, on which so much good paint is annually expended, cleared away and sold, to defray cost of removal, before our visitors of 1862 arrive? The authorities have been calling very freely on the public to assist them with the internal decorations: let them show some liberality with their external possessions."

TELEGRAPHIC PROGRESS.—The United Kingdom Telegraph Company have opened their lines between London, Birmingham, Manchester, and Liverpool, to the public, at the reduced and uniform charge of a shilling for twenty words, making the same charge between any of the stations. The former rate for telegrams of the same number of words from London to Manchester or Liverpool was four shillings.——The completion of the Pacific Telegraph, by which the Atlantic and Pacific slopes are joined, is announced in a despatch from San Francisco, dated October 25th:—The completion of the last link of the American Telegraph connects Cape Race with the Golden Horn, traversing nearly 5,000 miles with one continuous wire, and bringing these two points within two hours' telegraphic time of each other. The next westward extension of the line will be by the way of Behring's Straits to the mouth of the Amoor River, to which point the Russian Government is already constructing a line commencing at Moscow. San Francisco is now at one end of the longest telegraphic line in the world—70 degrees of longitude—St. John's (Newfoundland) being in 52 deg. 43 min. long. west Greenwich, while San Francisco is in 122 degrees. The news which starts from Newfoundland at four o'clock in the afternoon will reach the Pacific coast about half an hour *before noon of the same day*, and the news which San Francisco sends at mid-day will reach the Newfoundlanders at half-past four p.m.

ANTIQUITIES IN FRANCE.—The château of Saint Germain is to be converted into a museum of Gallic and Gallo-Romain antiquities. Singular it is that France does not yet possess any museum where relics of ancient Gaul are collected, so as to afford means of studying the primitive state of that interesting country. The innumerable quantity of arms, utensils, vases, figures, and coins discovered of late years, and the finding of several Celtic inscriptions, render such a museum almost indispensable.

TENDERS.

For new vinery, painter's and other works, at Higham Lodge, Walthamstowe, for Mr. T. H. Toms. Mr. Thomas Burton, architect:—

For new Vinery.

Lewis	£227 0 0
Ramsey	198 10 0
Nind	184 10 0
Sargeant	180 0 0
Dearsley	149 17 9

Painter's and other Works.

Nind	120 16 0
Heeps	116 0 0
Turner	112 0 0
Ramsey	99 0 0
Lewis	95 12 6
Dearsley	70 9 7

For New Bank premises, Newcastle-on-Tyne. Mr. J. E. Watson, architect:—

Accepted Tenders.

Gibson, mason, joiner, and carpenter's work	£5,304 0 0
Beck, slating	112 0 0
Glaholm & Son, plumbing	217 0 0
Aitken, plastering	264 0 0
Lawson & Son, painting and glazing	339 10 0
Barnett, coloured glass windows	140 14 0

For County Court, and other offices adjoining, in Winckley-street, Preston. Messrs. Myres & Veevers, Preston, architects.

Tomlinson	£1,003 0 0
Fitchie	999 0 0
Aughton	997 10 6
Bamber	997 0 0
Coward	973 0 0
Thompson	955 0 0
Cooper & Tullis	942 0 0
Coulthurst, junior (accepted)	905 0 0

For building detached villas at Windsor. Mr. Henry McCalla, architect.

Roberts	£1,400 0 0
J. & C. W. Todd	1,332 0 0
Dabbs (accepted)	1,065 0 0

For building two pairs of semi-detached villas near Hampton Court. Henry McCalla, architect.

Sewell & Co.	£2,730 0 0
London Building Company	2,409 0 0
Wheatley	2,300 0 0
Hatten	2,057 0 0
Richards	1,797 0 0
J. & C. W. Todd	1,638 0 0
Pugh & Wallis (accepted)	1,383 0 0
Stevenson	1,275 0 0

For two houses and shops, situate in Commercial-road, Landport, for Messrs. S. & B. Curtis. Messrs. Houghton & Son Portsea, architects.

Burbidge	£1,150 0 0
Light	1,125 0 0
Dillon & Co.	1,017 0 0
Backhurst (accepted)	935 0 0

For roads on Messrs. Curtis's estate, situate in Landport. Messrs. Houghton & Son, surveyors, Portsea.

Phillis	£804 0 0
Clarke	586 0 0
Hawkins	580 0 0
Light	505 0 0
Pharoah	504 0 0
Bottomley	457 0 0
Eades (accepted)	380 0 0

For roads and fencing on the estate of Mr. Serjeant Gaselee, situate at Buckland, Portsea. Messrs. Houghton & Son, surveyors, Portsea.

	Roads.	Fencing.
Phillis	£960 0 0	£105 10 6
Light	725 0 0	85 0 0
Bottomley	705 0 0	71 3 10
Eades	685 0 0	100 0 0
Pharoah	637 0 0	142 5 6
Miall	615 0 0	
Stavies	578 0 0	92 15 0
Clarke	394 0 0	117 17 6
Hawkins	388 0 0	119 12 6

For building a villa at Tonbridge Wells, for Mr. J. Kipling. Mr. Wm. Bond, architect.

Wren	£580 0 0
Mercer & Camfield	512 0 0
Perigoe (accepted)	499 10 0

For building a new club-room at the Camden Hotel, Tonbridge Wells. Mr. Wm. Bond, architect.

Punnett	£326 0 0
Pink	303 10 0
Perigoe (accepted)	294 0 0

For building a chapel at St. Mary, Newington, Workhouse. Mr. Henry Jarvis, architect.

Crawley	£990 0 0
Cook	891 0 0
Kent	874 0 0
Tarrant	856 0 0
Rider	830 0 0
Sawyer	795 0 0
Hammond	783 0 0
Henshaw	780 0 0
Coleman	768 0 0
Wilkins & Bottom	719 0 0
Glenn	690 0

TO CORRESPONDENTS.

To Remove Paint.—(In reply to your correspondent who wants to know the way to remove old paint, I beg to inform him that the best stuff for doing it is sold by Messrs. Macniares & Co., of 11, St. Andrew's Hill, Upper Thames-street. I have tried it several times, and find it answer admirably.—PICTOR).

A Sidmouthian.—Bradford (correspondents who send libellous statements without giving name and address must not expect any attention).—W. C.—R. R.—H. T.—A Clerk of Works.—A Constant Reader.—J. A. S.—S. T.—R. G.—A. N.—Rev. R. A. T.—R. J. W.—C. F.—I. M.—G. G. H.—R. W. A.—J. R.—J. M. H.—W. G. (we cannot accept simple assertions on such matters).—T. D. R.—A. J. B. (in type).—Symbolical corbels (ditto).—J. F. F.—F. E. W.—T. W. G.—E. A. — H. & Co. (we cannot refer).—A. A. — A Competitor.—J. W. G.—An Inquirer (each reply would need so much qualification, without additional information, that we cannot enter on the matter).

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ADVERTISEMENTS.

MR. WILLIAM ELLISON,
ARCHITECT and CONSULTING SURVEYOR,
OFFICES:—
13, FENCHURCH-BUILDINGS, FENCHURCH-STREET, E.C.

PARTNERSHIP.—A Contractor and Builder, long-established in one of the principal towns in the Midland Counties, having a valuable connection, capable of great extension, is desirous of TAKING into PARTNERSHIP a Gentleman who can command from 1,000*l.* to 2,000*l.*—Address, LEX, "Midland Counties Herald" Office, Birmingham.

PARTNER.—An experienced Contractor, extensively engaged in sanitary works, wishes for a PARTNER, with sufficient capital to carry on an increasing business, and to manufacture under patent an article in great demand for sanitary purposes.—Address, X. Y. Z. Mr. White's, Accountant, 13, Old Jewry Chambers, E.C.

TO PARENTS AND GUARDIANS.

A VACANCY now occurs in the OFFICES of an ARCHITECT in good practice, for a respectable PUPIL, who can reside with the family, if required. Premium moderate. Address, F. S. A. Post-office, Newcastle-on-Tyne.

ELECTION of DISTRICT SURVEYORS, under the Metropolitan Building Act, 1855.—The Metropolitan Board of Works hereby give Notice, that they will, on FRIDAY, the 29th day of NOVEMBER instant, at TWELVE o'clock at noon, at their Office, Spring-gardens, Charing-cross, proceed to the ELECTION of TWO DISTRICT SURVEYORS, viz. one for the district of East Hackney, and the other for the district of West Hackney, both in the county of Middlesex. Applications in writing, with certificates of competency, addressed to the Board, will be received at the Office of the Board until THURSDAY, the 28th of NOVEMBER inst. at FOUR o'clock p.m. Candidates must be in attendance at the meeting of the Board, at TWELVE o'clock at noon on the day of election.
JOHN POLLARD, Clerk of the Board.
Spring-gardens, Charing-cross, November 15, 1861.

FOREMAN WANTED.—WANTED, a FOREMAN in a FOUNDRY and IRONWORKS. Must be competent to superintend general engineering works.—Apply, by letter, to GLOVER, BROTHERS, 168, Drury-lane, W.C.

TO PARENTS AND GUARDIANS.

OUT-DOOR APPRENTICE WANTED, in an old-established business, where a thorough knowledge of gas engineering, gas-fitting, brass-finishing, smith's and other work, may be acquired. Premium, 50*l.*—Address, R. & H. Office of "The Builder."

WANTED, in MAY next, a WOOD CARVER, competent to undertake the duties of Foreman of Carvers and large cabinet-making establishment in Scotland. He must be qualified to make sketches and to design, and it will be a recommendation if he has previously filled a similar situation. A liberal salary will be given.—Apply, by letter, to N, care of Messrs. Purdie, Cowtan, & Co. 314, Oxford-street, London, W.

TO ARCHITECTS' ASSISTANTS.

WANTED, immediately, a thoroughly-qualified ASSISTANT. Must be a good draughtsman, acquainted with construction, and able to prepare finished and detail drawings, and specifications.—Address, stating terms, qualifications, &c. to O. P. care of Charles Barker & Sons, 8, Birchin-lane, E.C.

TO BUILDERS' CLERKS, &c.

WANTED, at Christmas next, a Young Man of respectability, who has been used to the routine of the office. Must be quick at figures, and willing to make himself useful. Salary, 21s. per week. Hours, from nine till six. Locality, St. John's Wood.—Apply, by letter only, to Mr. H. TOVEY, Architect and Surveyor, No. 5, Devonshire-terrace, Camden-road, London, N.W.

TO SURVEYORS.

WANTED, by the Corporation of an Orphan Working School, a GENTLEMAN accustomed to the MANAGEMENT of ESTATES and BUILDINGS. The duties and remuneration may be known of the Secretary.—Sealed applications, with testimonials, to be addressed to "The Estate Committee," not later than THURSDAY, DECEMBER 5th, 1861.
JOSEPH SOUL, Secretary.
Offices, 32, Ludgate-hill, E.C.

WANTED, by a Builder in a large Seaport Town in the South of England, an experienced SHOP FOREMAN. First-class references indispensable.—Address, SURVEYOR, Post-office, Essex-street, Islington, N.

WANTED, a Good LETTER-CUTTER and CEMETERY MASON. One who can do carving preferred. Constant employment for a steady and respectable man.—Apply, by letter, stating wages, &c. to JOHN WELLSPRING, Builder, Dorchester, Dorset.

WANTED, for a Building in Malta, a first-rate CLERK of WORKS, with ample knowledge of the building trades generally. One who has been a builder's foreman preferred. Salary 4*l.* a week, including travelling and all other expenses.—Apply, by letter only, to E. M. B. 1, Old Palace-yard, Westminster, S.W.

WANTED, for a constancy, a confidential CLERK, as bookkeeper, measuring and making out accounts; one who has been accustomed to an architect's or builder's office preferred. Salary, 2*l.* per week. A respectable reference required.—Apply to Mr. HOLLAND, Stained Glass and Decorative Works, St. John's, Warwick.

WANTED, in the Office of an Architect of standing in London, a YOUNG GENTLEMAN who has some professional knowledge, and is a fair draughtsman, and who, being anxious of improving himself, would consequently accept a small salary; or a small premium would be taken, subject to an arrangement.—Apply by letter only, stating the usual particulars, to L. M. 3, Berners-street, Oxford-street, W.

WANTED, by a Young Man, aged 22, a SITUATION, as TIMEKEEPER. Last situation four years. Address, C. E. W. 105, George-row, Bermondsey.

TO ARCHITECTS OR BUILDERS.

WANTED, by a Builder's Son, a SITUATION in an Architect's or Builder's Office. He has been articled with an architect for six years, and has lately been engaged managing his father's business.—Apply to A. V. No. 28, Sheep-hill, Lincoln.

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WANTED, by a respectable Young Man, a SITUATION as PLUMBER. Can do lead and sash glazing. A first-class reference can be given.—Address, C. D. 3, Acorn-street, Bishopsgate-street, City.

TO BUILDERS, PLUMBERS, &c.

WANTED, by a good Three-branch Hand, a CONSTANT SITUATION. Is thoroughly acquainted with jobbing, and has no objection to the country. A good reference can be given, if required.—Address to E. NAUNTON, 45, Arthur-street West, King's-road, Chelsea, London, S.W.

WANTED, a RE-ENGAGEMENT as CLERK of WORKS, or Foreman (indoors or out), by a thoroughly practical man, who understands measuring and estimating, and would have no objection to make himself generally useful, or to an engagement in the country.—Address, D. E. 4, Camden Hill-Villas, Bedford-place, Kensington.

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WANTED, by a first-class PLUMBER, a constant SITUATION. No objection to fill up his time with gasfitting, &c. Good reference.—Address, W. B. 49, Whitcomb-street, Leicester-square.

TO BUILDERS, PLUMBERS, &c.

WANTED, Constant EMPLOYMENT as good PLUMBER or THREE-BRANCH HAND.—Address, Y. Z. Mr. King, 16, Charles-street, Manchester-square.

TO SURVEYORS AND BUILDERS.

WANTED, a SITUATION, by a Young Man, in a Surveyor's or Builder's Office. Is quick at quantities, and a neat draughtsman. Good references. Terms moderate.—Address, M. C. Mr. Pullen's, 2, Marlborough-place, Kennington-cross, London.

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WANTED, by a Gentleman from a first-class office, an ENGAGEMENT. He possesses the qualification required by any architect requiring real assistance.—Address, J. W. 114, Euston-road, London.

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WANTED, Constant EMPLOYMENT, by a first-class Plumber, who thoroughly understands glazing, painting, and gas-fitting. First-class references.—Address, WILLIAM SMITH, 44, Paradise-street, Lambeth.

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THE Advertiser, aged 33, is open to an ENGAGEMENT, having had considerable experience on railways, water, and sewerage works.—Address, WM. F. BOWELL, Lanchester, near Durham.

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THE Advertiser, aged 23, who is quick at squaring dimensions, abstracting, billing, &c. taking plans of property, and other duties of a surveyor's office, is open to a RE-ENGAGEMENT. Can be highly recommended from present employer, with whom he has just completed a large building. Unexceptionable references can be given. Salary moderate.—Address, W. W. W. Office of "The Builder."

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THE Advertiser, a first-rate Draughtsman, and having a thorough knowledge of detail and construction, is open to an ENGAGEMENT. Terms moderate.—Address, G. G. 39, Michael's-place, Brompton, S.W.

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THE Advertiser desires a RE-ENGAGEMENT in either of the above offices. Is a fair draughtsman; accustomed to the usual office routine; has a knowledge of perspective, quantities, and measuring up work; and has been in some of the best offices in town. Age, 26.—Address, A. X. 16, Great Marlborough-street, W.

THE Advertiser, a Young Man, who has had about six years' experience as a Civil Engineer and Architect's Draughtsman, is in want of a SITUATION.—Address, O. P. Craven Lodge, Rainhill, Lancashire.

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THE Friends of a respectable, well-educated Youth (aged 16), just left school, wish to ARTICLE him for a term of years, to a Practical Man, Inn-doors. A moderate premium will be given.—Address, by letter only, to Mr. WHITELL, 1, Bedford-place, Commercial-road East.

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THE Advertiser is desirous to obtain an ENGAGEMENT in an ARCHITECT or SURVEYOR'S OFFICE, to prepare Perspective, Finished, Working, and Detail Drawings.—Address, Z. M. A. Post-office, Hownslow, W.

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OCCASIONAL ASSISTANCE.—A Surveyor, of considerable practical experience, is desirous of meeting with an ENGAGEMENT for part of his time in taking out quantities, writing specifications, measuring, and making up Builders' accounts, disputed or otherwise. Satisfactory references to Architects and Builders.—Address, X. Y. Z. 20, Charlotte-street, Portland-place.

HANDRAILING.—TWO LESSONS sufficient to enable any ordinary workman to execute a rail. Any rail 27 inches by 2½ inches got out of 3-inch plank, cut square through. Rails, lines, &c. sent for any description of stairs. Lessons, 1s. each; a course of 12 for 10s.—Address, Mr. C. FAWSON, Tollesby, near Middlesborough.

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A GOOD General BRASS FINISHER and GASFITTER is in want of EMPLOYMENT. Terms liberal. Address, F. B. No. 18, Red Lion-street, Kingsland-road.

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AN ARCHITECT'S ASSISTANT wishes for a RE-ENGAGEMENT. He is a good perspective draughtsman, and accustomed to the usual office and out-door duties of an Architect's practice, together with land surveying and levelling.—Address, M. A. Post-office, Brunswick-terrace, Barnsbury, N.

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A YOUTH, 15 years of age, who has just left school, and who has a taste for mechanical drawing, is anxious to learn ENGINEERING. He would be happy to meet with a firm who would accept his services for any definite period in place of a premium.—Address, T. L. 58, Wilson-street, Finsbury, E.C.

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A GENTLEMAN, twelve years in the profession, is desirous of obtaining an ACTING PARTNERSHIP in an established and respectable business.—Address, R. T. Wilts and Dorset Bank, Trowbridge.

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A YOUNG MAN, having had some years' experience in the above offices, is desirous of meeting with a SITUATION where he could Improve himself. Salary moderate. First-rate references given.—Address, R. T. R. No. 192, Long-lane, Bermondsey, S.E.

A THOROUGHLY practical CLERK of WORKS, who is fully qualified to superintend the erection of any extensive works, or measure up works, or take out quantities, is desirous of a RE-ENGAGEMENT.—Address, C. of W. Post-office, St. Alban's, Herts.

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A SOBER, Married Man, aged 30, wishes to obtain a SITUATION as a general REPAIRER of the above, and to collect rents, if required. Has had twenty years' experience. Good references can be given.—Address, J. BROWN, 1, St. Helens-place, Spafields, Clerkenwell.

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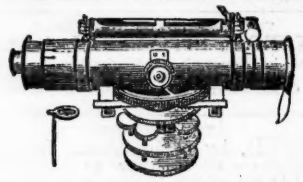

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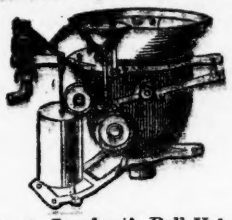

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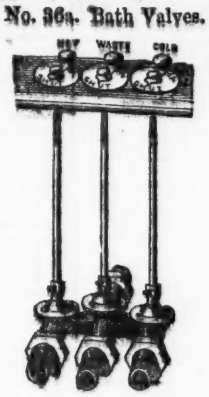

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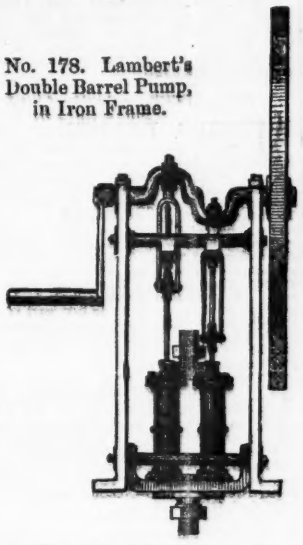

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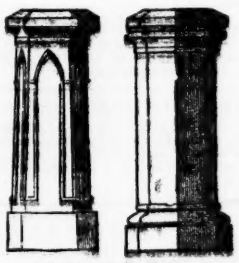

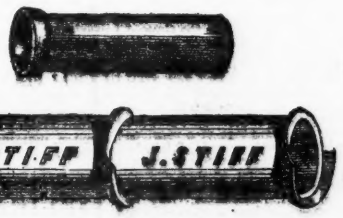

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Messrs. SPILLMAN & SPENCE, Agents for the Owners of Branksea Island, are enabled to offer to Contractors and large Consumers, most advantageous terms for the sale of those first-class goods. Specimens may be seen at Messrs. SPILLMAN & SPENCE'S Offices, and an inspection is respectfully invited.

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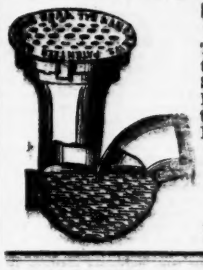

TYE & ANDREW'S NEW PATENT SINK TRAP

is universally admitted to be the only perfect Trap for Sinks in Domestic Dwellings. Prospectuses on application to the Patentees, TYE & ANDREW, Brixton-road.

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MARK H. BLANCHARD & CO. Successors to COADE'S ORIGINAL TERRA COTTA WORKS, established 1769, and the recipient of the PRIZE MEDAL, at the Exhibition of 1851, for MATERIAL and WORKMANSHIP in TERRA-COTTA, have the honour to inform the Nobility, Gentry, Architects, and others, that they can be SUPPLIED from the above Works with every article in this imperishable and invaluable Material in Sculptural and Architectural Embellishment, suitable to the Palace, Mansion, or Cottage, which will be found to be unequalled in price, quality, and durability; and the Works of this Establishment have stood the test of time.

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J. H. ANDREWS, Wisbech, Cambridgeshire, offers

Red Pantiles, at 47s. 6d. per 1,000.
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Cash Prices. Delivered in Trucks in London, or along the Line on the Eastern Counties Railway.

TERRA-COTTA VASES, STATUES,

TAZZAS, &c.—The nobility, gentry, and architects are respectfully informed that JOHN M. BLASHFIELD has REMOVED his Establishment from Praed-street, Paddington, to a New Gallery at No. 16, GREAT MARLBOROUGH STREET, W. where specimens of Terra Cotta Works of Art may be seen, and orders for London should now be addressed. Orders for the country and applications for estimates for new designs should be sent direct to the Terra-Cotta Works, Stamford, Lincolnshire.

IMPORTANT to ARCHITECTS,

BUILDERS, DECORATORS, and OTHERS.—CAST WORK, CENTRE FLOWERS, Shop Front TRUSSES, VASES, ROYAL ARMS, CAPITALS, and every description of ornament for internal and external decorations, EXECUTED IN PLASTER, Carton Pierre, Composition, and every kind of Cement at reduced prices.—Messrs. HEBBERT, Modellers, 242, Euston-road, St. Pancras.

PEAKE'S TERRO-METALLIC TILES,

PIPES, &c.—Notice is hereby most respectfully given, that the LONDON DEPOT for this WARE is REMOVED to No. 81 Wharf, Macclesfield-street North, City-road Basin, N. Sndly, that the trade term, "TERRO-METALLIC" is the exclusive right of the Proprietor; and 3rdly, that the "Reports of the Juries," page 581, of the Great Exhibition, note the grant of a First-class Medal, and rank the Manufactories known so long as "The Tileries," Tunstall, Staffordshire, as the first of the kind in the world.

IMPERISHABLE TESSELATED

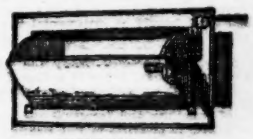
PAVEMENTS, combining a highly decorative and economical substitute for ordinary floors of their perishable coverings. MAW & CO.'S Pattern-book, designed by M. Digby Wyatt, esq. together with a special design and estimate of cost adapted to any given dimensions of hall, passage, conservatory, verandah, frieze, &c. will be sent on application to Benthall Works, Broseley, Salop.

May be seen at the Exhibition of Building Inventions, &c. now open at the Galleries of the Architectural Exhibition, 9, Conduit-street, free.

London Agent—W. R. SIMPSON, 456, West Strand, who has on view a great variety of Specimens of the Pavements.

VENTILATION—PURE AIR.

Sheringham's Ventilator for the admission of Pure Air through an



EXTERNAL WALL.

With single pulley, from 6s. each; with leading pulley, from 8s. 6d. These Ventilators are arranged so that the requisite quantity of air may be admitted for the due ventilation of an apartment without the slightest draught being felt by the occupants; and as they are placed in the external wall, their action is not impeded when the house is closed for the evening, at which time a constant supply of fresh air is most required.—HAYWARD, BROTHERS, sole Manufacturers, 117 and 118, Union-street, Borough, London; and of all respectable Ironmongers, Builders, &c.

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SALES BY AUCTION.

THE SALE OF THE EAST INDIA HOUSE.

PULLEN, HORNE, & EVERSFIELD respectfully inform the public that THE CATALOGUES of this important SALE of BUILDING MATERIALS, appointed to take place on MONDAY next, NOVEMBER 25th, and two following days, ARE NOW READY FOR DELIVERY.

80, Fore-street, and 40, Parliament-street, Nov. 22, 1861.

The valuable MATERIALS of the EAST INDIA HOUSE.—SECOND PORTION.

PULLEN, HORNE, & EVERSFIELD have the honour to announce that they are instructed to SELL by AUCTION, on the PREMISES, on MONDAY, NOVEMBER 25, and following days, at TWELVE, in lots, the second portion of the exceedingly valuable MATERIALS of the EAST INDIA HOUSE, in Leadenhall-street, covering an acre and a half of ground. Detailed particulars will appear in catalogues. The following is necessarily only a brief summary, viz.:—200 tons of lead on the roofs, in the various forms of flats, gutters, cisterns, and pipes; 350 squares of capital slates and slating boards, an immense quantity of prime oak and fir timber in rafters, joists, plates, girders, &c.; 2,000 squares of flooring boards, 850 pairs of sashes and frames, 1700 doors of all kinds, marble chimneypieces, and interior fittings-up; the complete erection of the New Museum, with its elegantly slender, moulded, and highly decorated columns, supporting the interior of an arcaded quadrangle, surmounted by an ornamental domed lantern, and paved in mosaic work. This beautiful example of Moorish and Indian architecture was erected only about three years ago from the designs of Mr. Digby Wyatt, and is capable of being easily removed and attached to some nobleman's or gentleman's mansion, or it would form a striking object of interest and attraction in the gardens of one of our places of public recreation. Numerous stone staircases, 6,000 feet super. of capital 4-inch York landings, and about 15,000 feet of York and Portland paving; 4,000 feet run of Portland coping, stone cills, stringing, cornice, and other stonework; iron columns, iron girders, iron staircases, railings, and gratings; hot water apparatus, with large boilers and socket pipe, and several thousand feet of gas pipe; wrought-iron doors and erection of strong room in the Treasury; the copper vanes at the top of the buildings, communicating with the wind dials, one of which is connected with an astronomical clock of antique workmanship; about 2,000 feet of sheet copper, large wrought-iron tanks; sinks, pumps, stoves, and much other property of peculiar interest and value.—May be viewed on Friday and Saturday previous, and catalogues had of PULLEN, HORNE, & EVERSFIELD, 80, Fore-street, City, E.C. and 40, Parliament-street, Westminster, S.W.

METROPOLITAN IMPROVEMENTS.—SOUTHWARK and WESTMINSTER COMMUNICATION.—THIRTEENTH CLEARANCE SALE.

PULLEN, HORNE, & EVERSFIELD are instructed by the Metropolitan Board of Works to SELL by AUCTION, on the PREMISES, on WEDNESDAY, DECEMBER 4, at TWELVE, in lots, all the valuable BUILDING MATERIALS and FITTINGS-UP of about TWENTY HOUSES (several of a modern and superior character), Workshops, Warehouses, and other Premises, situate in Castle-street and West-street, and in front of Bridge-street, Southwark Bridge-road.—Further particulars in a few days, when catalogues may be had of PULLEN, HORNE, & EVERSFIELD, 80, Fore-street, E.C. and 40, Parliament-street, S.W.

ACTON, MIDDLESEX.—FREEHOLD BUILDING LAND.

MR. WHITTINGHAM is instructed to SELL by AUCTION, at the AUCTION MART, opposite the Bank of England, on MONDAY, NOVEMBER 25th, 1861, at TWELVE for ONE o'clock, THIRTY LOTS of FREEHOLD BUILDING LAND, with frontage to Avenue and Church roads, and within a few minutes' walk of the railway station. Nine-tenths of the purchase money may remain on mortgage or contract, to be paid by instalments.—Particulars, plans, and conditions of sale may be obtained of Messrs. RUSSELL & DAVIES, 59, Coleman-street, London, E.C.; the Auctioneer, 14, Moorgate-street, London, E.C.; and at the Place of Sale.

BARNET, HERTS.—TO BUILDERS AND OTHERS.—FREEHOLD BUILDING LAND.

MR WHITTINGHAM is instructed to SELL by AUCTION, at the AUCTION MART, opposite the Bank of England, on MONDAY, NOVEMBER 25, 1861, at TWELVE for ONE o'clock, a further portion of the eligible FREEHOLD BUILDING LAND situate close to the Barnet Station on the Great Northern Railway, on both sides of the line, with frontages to the New Barnet-road, Somerset-road, and Henry-road. The estate possesses delightful views of the surrounding country; the neighbourhood is lighted with gas, and excellent water is laid on. The Metropolitan Railway will give direct communication with the City. Nine-tenths of the purchase-money may remain on mortgage, at 5 per cent. to be paid in nine years by equal half-yearly instalments; but the whole or any part of the balance may be paid off at any time without notice.—Particulars, plans, and conditions of sale may be obtained at the Railway Hotel, Barnet Station; of Messrs. RUSSELL & DAVIES, 59, Coleman-street, London, E.C.; of the Auctioneer, 14, Moorgate-street, London, E.C.; and at the Place of Sale.

LEYTON, ESSEX.—Freehold Building Land, Five Miles from the Bank, and a Mile and a Half from Stratford, and near the Low Leyton Station on the Loughton Railway.

MR. WHITTINGHAM is instructed to SELL by AUCTION, at the AUCTION MART, opposite the Bank of England, on MONDAY, DECEMBER 2nd, 1861, at TWELVE for ONE o'clock, in Fifty-six Lots, eligible FREEHOLD BUILDING LAND, comprising a part of the valuable field contiguous to the Grange Estate, having a frontage to Leyton-road and to the new roads called Thornhill and Oliver roads, and situate within five minutes' walk of the Low Leyton Railway Station, and within a short distance of Epping Forest. Nine-tenths of the purchase-money may remain on mortgage or contract at 5 per cent. to be paid in nine years by instalments.—Particulars, plans, and conditions of sale may be obtained of Messrs. RUSSELL & DAVIES, Solicitors, 59, Coleman-street, London, E.C.; of the Auctioneer, 14, Moorgate-street, London, E.C.; and at the Place of Sale.

NEW HOUGHTON, within seven miles of the Railway Station, Fakenham, Norfolk. — EXTRAORDINARY SALE OF CEDAR TIMBER TREES.

MR. BECK is honoured with instructions to submit to PUBLIC COMPETITION, on WEDNESDAY, DECEMBER 4th, 1861, 40 magnificent CEDARS, now lying in Houghton Park, the property of the Most Noble the Marquis of Cholmondeley. The Cedar Grove at Houghton has for several generations been deemed, and most justly so, the gem, not only of that splendidly timbered park, but of the surrounding district; the extraordinary size of the trees, their great length, varying from 40 to 50 feet in the bole, with a circumference of from 10 to 12 feet, perfectly clean and sound, and their great beauty as ornamental trees, would entirely have put out of the question their being felled under any ordinary circumstances. The disastrous gale of February, 1860, completely destroyed the grove, and uprooted nearly the whole of the trees without injury to their trunks; hence it is that they are submitted to the public. The peculiar qualities of the wood of the Cedar of Lebanon are deserving the particular attention of coach-builders for all descriptions of panelling, and furniture and cabinet makers for the remarkable faculty it possesses of not casting or warping after it is worked, as well as for the strong scent which the wood retains, and which entirely prevents the ravages of insects; in fact, no insect will remain where it is used. It may never, for obvious reasons, be the Auctioneer's privilege to submit again to public competition such a valuable and remarkable quantity of this rare and beautiful timber, and he therefore ventures to solicit the inspection of it previous to the Sale, when it will be seen that the trees have been all carefully sawn off at the butt-ends, to facilitate the view of its soundness. A few SILVER FIRS, of almost equally large dimensions, will be sold at the same time, and may be viewed previous to the Sale, on application to Mr. W. STANTON, the Resident Agent at Houghton. — Sale to commence at TWELVE o'clock precisely. Three months' credit will be given on approved security.

TO CONTRACTORS, BUILDERS, AND OTHERS.—A STOCK OF DRY TIMBER.

MR. C. FURBER will SELL by AUCTION, at the WHARF, 3, Canal-road, Kingsland-road (by permission), on THURSDAY, NOVEMBER 28th, 1861, at TWELVE for ONE o'clock, the above, consisting of 700 best White Deals, 600 dry Pine Planks, 300 Christiana White Planks, and 250 Yellow Deals.—May be viewed, and catalogues had, at the Premises; and at the Auction Offices, in Warwick court, Gray's-inn.

TO BUILDERS, DEALERS, and OTHERS.—BRUNSWICK-STREET, CLERKENWELL.—Second Portion of BUILDER'S STOCK.

MR. W. BOOTH (of Hackney-road) will SELL by AUCTION the remainder of the above-named STOCK, as soon as it can be collected from the docks, wharfs, sawmills, and jobs.—Full particulars next week.—W. BOOTH, Auctioneer and Surveyor, Molland House, Hackney-road, London, N.E. near Cambridge Heath Gate.

FLEET-STREET, in the City of London.—FIRST-CLASS FREEHOLD PROPERTY.

MESSRS. BEADEL & SONS have been favoured with instructions to SELL by AUCTION, at the MART, Bartholomew-lane, London, on TUESDAY, DECEMBER 17th, 1861, at TWELVE for ONE o'clock, in one lot, those magnificent SHOP PREMISES situate and being 78, Fleet-street, in the City of London, in the occupation of Mr. Charles McLean, Looking-glass Manufacturer. These premises have a frontage of 14 feet 6 inches, and a depth of about 85 feet. The front is of an elaborate design, and has superb sheets of plate-glass in shop-front and windows on first and second floors. The height of the greater portion of the very extensive shop is 18 feet 6 inches in the clear between floor and ceiling. There are three floors above the shop, and a basement beneath. The situation of this property for business purposes is almost without parallel, being in the best part of one of the greatest City thoroughfares.—Particulars, with conditions of sale, may be obtained of Messrs. BIRCH, INGRAM, & WHATELY, Solicitors, 68, Lincoln's Inn Fields, W.C.; at the Mart; and of Messrs. BEADEL & SONS, 25, Gresham-street, E.C.

TO BUILDERS, CARPENTERS, AND OTHERS.

MESSRS. LEREW & LEREW will SELL by AUCTION, on the PREMISES, Camden-terrace, Camden-town, NOVEMBER 25th, at TWELVE for ONE, yellow, white, pine, and spruce planks, deals, and battens; sawn ditto, prepared flooring, mouldings, quartering, wide pine boards, feather-edge boards, slating battens, pantile laths, new sashes and frames; forty doors, scaffold poles, screw jacks, &c.—Auction Offices, 2, Cardington-street, Hampstead-road, N.W.

TO BUILDERS and OTHERS.—1,000 Scaffold-boards, 600 Scaffold poles, 60 dozen putlogs, bosses, ladders, new deals, &c. &c.

MESSRS. F. HALL & SON will SELL by AUCTION, on FRIDAY next, NOVEMBER 29th, at TWELVE o'clock, on the PREMISES, Regent-street, Westminster (adjoining Messrs. Bowley, Bros. Builders), the STOCK and PLANT: comprising about 300 first quality white spruce deals, 300 best dry Sagueray pine plank, cut into useful thicknesses (having been cut four years), 300 bundles of plasterers' laths, 1,000 scaffold-boards, 600 poles, 60 dozen putlogs, 50 dozen cords, long fall-ropes, 2 standard and other ladders, 2 very excellent double and single purchase-crabs, capital pumd, 2 large tarpaulins, barrows, steps, trestles, work-benches, stoves, several black marble and slate slabs, portable forge and anvil; and a quantity of materials, removed from various contracts and repairs, in new and old doors, sashes and frames, flooring boards, joists, quartering, stoves, ranges, chimney-pieces, and other modern fittings and useful effects.—May be viewed, and catalogues had on the Premises; and of the Auctioneers, Kennington, S.

TO BUILDERS, EXPORTERS, AND OTHERS.

MR. EDWIN WHITE will SELL, at 12, HOLBORN-BARS, corner of Castle-street, on TUESDAY next, at ONE for TWO precisely, nearly 900 PIECES of good modern English and French PAPERHANGINGS, in great variety, and about 100 plain and sculptured statuary, vein, Sicilian, black, fossil, rouge-royal, and other marble, and first-class enamelled slate chimney pieces.—View and catalogues day prior and morning of sale.

No. 40, MONTAGU-SQUARE.—A capital Leasehold Residence, with additional light, lofty, and spacious rooms attached to the Ground and First Floors, suitable for the display of Works of Art, for Chamber Concerts, or professional purposes.

MESSRS. RUSHWORTH & JARVIS are directed by the Executor of a gentleman, deceased, to SELL by AUCTION, at the MART, on FRIDAY, DECEMBER 6, at TWELVE, the GROUND LEASE of the excellent RESIDENCE, No. 40, Montagu-square. The house possesses the advantage of a spacious third room on the ground floor, to which an ante-room is attached; and on the first floor (beyond the two drawing-rooms) is a capital lofty apartment suitable for a music-room, museum, oratory, artist's studio, or the library of an architect or professional gentleman. Term, 40½ years, at a ground-rent, with immediate possession. May be viewed, and particulars had at the Mart; of Messrs. POWNALL, SON, & CROSS, Staple Inn; and of Messrs. RUSHWORTH & JARVIS, Savile-row, Regent-street, W. and No. 19, Change-alley, Cornhill, E.C.

LOUGHTON, ESSEX.—TO BE SOLD, at a reasonable price, and either singly or in pairs, SIX FREEHOLD semi-detached VILLAS, in carcases, of a substantial and ornamental character, with gardens in front and rear, within three minutes' walk of Loughton Station on the Woodford Line, with termini in London, at Bishopsgate-street and Fenchurch-street. To builders the above is well worthy their attention as an investment, and offers a good opportunity to a private buyer, for obtaining a residence finished to his own taste at a comparatively moderate outlay. The Proprietor has no objection to let the whole or half of the purchase-money remain on mortgage at five per cent. having a sufficient guarantee as to completion in case the whole purchase-money should be required, or the Proprietor will have no objection to sink any part of the purchase-money on a ground-rent, at five per cent.—Apply personally, or by letter, to the Proprietor, Mr. MILLS, at his Office, No. 3a, Brunswick-place, City-road; or personally, on SATURDAYS, at his private residence at Loughton, adjoining the property.

VALUABLE WHITE BRICK EARTH. The Advertiser, having a large tract of the most valuable BRICK EARTH, the pure Gault formation, which produces the very best hard White Bricks, equal in every respect to the best Suffolk, is willing to treat for the Leasing, or otherwise, on liberal terms. The Land is situated in the parish of Otford, Kent, and within two miles of a station on the Sevenoaks line of railway.—For further particulars, apply to Mr. ROBERT NASH, of Otford, or to Messrs SOLE, TURNER, & TURNER, Solicitors, 68, Aldermanbury, London.

MANOR of DULWICH. — ALLEYN'S COLLEGE ESTATE.—The Governors of Alleyn's College are now prepared to LET a PORTION of the ESTATE in Plots for Building purposes.—Plans may be seen and particulars obtained from CHARLES BARRY, Esq. College Surveyor, at 27, Sackville-street, Piccadilly.

OXFORD-STREET.—TO BE LET, on a building lease, a valuable PLOT of GROUND, containing about 6,000 superficial feet, and having a frontage of upwards of 40 feet to Oxford-street, with a return frontage of upwards of 90 feet to Perry's-place.—For particulars, apply to Messrs. ROBERT JOHN and HENRY CLUTTON, 9, Whitehall-place, Westminster.

HAYWARD'S HEATH STATION BRIGHTON RAILWAY.—FREEHOLD LAND, near the Station, TO BE SOLD or LET on Building Leases, with power to purchase the Freehold. Advances will be made to builders.—Apply to Mr. BURTON'S Offices, 6, Spring-gardens, Charing-cross, London; or to Mr. JONES, 21, Great George-street, Westminster.

WANTED, about FIFTEEN ACRES of OPEN GROUND, not less than fifteen nor more than thirty miles from London, and not more than one mile from a railway station. A gravelly or chalk soil would be preferred. The agricultural qualities of the soil are not of importance, but there must be an abundance of good water, and the facilities of drainage must be complete.—For further particulars apply to ROBERT HILL, Esq. Newsquare, Lincoln's-inn.

TO BE LET, on Building Leases, for 99 Years, the remaining Portions of the GORDON ESTATE, situate opposite West Hackney Church, Stoke Newington. Advances to respectable parties.—Apply to Mr. JOSEPH SPRINGBETT, Architect, Kingsfield Lodge, on the estate; or at his Offices, 12, Clement's-lane, Lombard-street.

BUILDING PLOTS.—To HOTELKEEPERS, BUILDERS, WHARFINGERS, and OTHERS.—The Wardens and Assistants of Rochester Bridge are prepared TO LET on LEASES, for 75 Years, the Site of a part of the present Crown Inn and Buildings adjoining, for the erection of an Hotel thereon, and other undisposed of PLOTS of LAND in the City of Rochester, situate at both ends of Rochester Bridge, and are desirous of receiving TENDERS for the same. Lithographed plans and particulars, with conditions of letting, may be obtained, upon application to Messrs. ESSELL, KNIGHT, & ARNOLD, Solicitors, the Precinct, Rochester; and of MARTIN BULMER, Esq. Architect, Maidstone and Strood. Sealed Tenders are to be delivered at the Offices of Messrs. ESSELL, KNIGHT, & ARNOLD, on or before TUESDAY, the 31st day of DECEMBER next, by SIX o'clock in the afternoon, addressed to the Wardens of Rochester Bridge, and endorsed "Rochester Bridge Estates," "Tenders for Building Plots," &c. The Wardens and Assistants do not bind themselves to accept the highest or any Tender.

Rochester, 16th November, 1861.

HOUSES WANTED, to PURCHASE.— The Advertiser wishes to invest a Sum of Money in the PURCHASE of HOUSE PROPERTY. This is a rare chance for parties having houses to sell, or the Advertiser would advance money on the same, for short or long periods. Business transacted with despatch.—Apply to Mr. PLIMPTON, No. 42, Lombard-street, E.C.

BUILDING LAND, and Liberal Cash Advances.—To RESPECTABLE BUILDERS.—Unexceptionable position for a few first-class Houses, at Sydenham and Forest-hill, ¼ mile of station, and ¾ mile of Crystal Palace.—Apply to Mr. F. WARBURTON STENT, Architect, 11, Park-street, Westminster, S.W.

TO BUILDERS and OTHERS.—Notice is hereby given, that the Trustees of the Rev. Dr. Spurlow's Charity Estate at Hackney, have several PLOTS of LAND TO LET, to build on, eligible for villas and other respectable private dwellings. The land will be let direct from the freeholder, and free of land tax and tithe commutation rent-charge. The above estate offers an excellent opportunity to persons desirous of building houses to reside in themselves.—For further particulars inquire of Mr. GLIDLON, Surveyor, No. 2, Old Church-yard, Hackney; or of Mr. C. H. PULLEY, of Upper Homerton, and 28, Great Winchester-street, Old Broad-Street, City, Solicitor.

TO CARPENTERS, WHEELWRIGHTS, and UNDERTAKERS.—TO BE DISPOSED OF, an old-established BUSINESS in the above line, doing an excellent trade, situate in a considerable village adjacent to several smaller villages, in Hertfordshire. The Stock to be taken at a valuation. The above offers an excellent opening to a business-like man with a moderate capital. — For further particulars apply to Messrs. REE, SON, & BENINGFIELD, Auctioneers, &c. Ware, and Hertford.

TO CARPENTERS, BUILDERS, DECORATORS, &c.—TO BE DISPOSED OF, for 200*l.* a BUSINESS and STOCK as above, comprising deals, benches, scaffolding, horse and cart, and all the requisite tools for each branch. Premises comprise dwelling-rooms, office and fittings, painters' and carpenters' shops, stable, and shed. Rent nearly made by scaffolding. Situation, West-end.—Address, Mr. A. ECKERT, 52, Greek-street, Soho, W.

TO PLUMBERS, PAINTERS, and GLAZIERS.—TO BE LET, a SHOP in the above LINE, established nearly twenty years.—For terms, apply to Mr. PROCTER, on the Premises, 1, Sherbourne-place, Blandford-square, N.W.

TO CARPENTERS, JOINERS, and the GENERAL REPAIRING LINE.—WANTED to PURCHASE, the GOOD-WILL of a BUSINESS in the above line, where an established Jobbing connection could be proved.—Address, stating where situated, premium required, and all particulars, to T. C. Office of "The Builder."

PELICAN LIFE INSURANCE OFFICE, ESTABLISHED IN 1797, 70, Lombard-street, E.C. and 57, Charing-cross, S.W.

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	14 years	36 2 0	73 10 0
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40	7 years	49 13 6	84 10 0
	14 years	61 2 0	95 10 0
	21 years	75 2 6	108 0 0
60	7 years	95 4 6	127 10 0
	14 years	117 2 6	144 10 0
	21 years	144 1 0	165 10 0

*** For Prospectuses, Forms of Proposal, &c. apply at the Offices as above, or to any of the Company's Agents.

ACCIDENTS OF ALL KINDS AND FROM ANY CAUSE, may be provided against by an Annual payment of £3 to the RAILWAY PASSENGERS ASSURANCE COMPANY, which secures £1,000 at death by Accident, or £6 weekly for Injury. NO EXTRA PREMIUM FOR VOLUNTEERS. ONE PERSON in every TWELVE insured is injured yearly by ACCIDENT. £75,000 HAVE BEEN ALREADY PAID AS COMPENSATION. For further information, apply to the Provincial Agents, the Railway Stations, or at the Head Office, 64, Cornhill (late 3, Old Broad-street).

ANNUAL INCOME, £40,000.
CAPITAL, ONE MILLION.

64, Cornhill, E.C. WILLIAM J. VIAN, Secretary.
January, 1861.

POLYTECHNIC INSTITUTION. — Next Monday evening at Half-past Seven, Lecture on the Detection of Arsenical Poisoning, by James D. Malcolm, esq. Last week of the Lecture by Professor J. H. Pepper, on the "Art of Balancing," explaining the principles on which Blondin and Leotard perform their wonderful feats. Engagement of Master Edwin Sanders, the infant vocalist of extraordinary power, daily at four, and every other evening at nine. Re-engagement of G. A. Cooper, esq. assisted by Miss Emma Snelson and Madame Allene, for his highly successful musical entertainment, entitled "The Rose, the Shamrock, and the Thistle." Lecture on Haworth's Patent Perambulator and New Street Railway. The Series of Magnificent Dissolving Views, with descriptive Lecture, by J. D. Malcolm, esq. illustrating the "Citizen of the World." Beautiful Electrical Experiments, by Mr. J. L. King. Open from 12 to 5, and from 7 to 10. N.B.—John Snell, Waterman of Hampton, will illustrate the Rope Feats. Eighth and last week of his engagement.

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